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COMPUTERWORLD

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API WARS
While Microsoft tells developers that OLE 2.0 is the road to Cairo (*see story at right*), Apple and Lotus counter with their own set of OLE-like protocols. *Page 14*. Sun announces a software interface said to enable users to run Windows applications oo Unix workstations running X Windows. *Page 14*

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PENTIUM ARRIVALS
Intel Pentium-based PCs, which took two years to design, will start hitting the market next week. *Page 16*

Windows NT futures

OLE 2.0 will pave the road to 'Cairo'

By Christopher Lindquist
SEATTLE

Object Linking and Embedding Version 2.0, as described by Microsoft Corp. al the OLE 2.0 Developers Conference here last week, may put developers "on the road to Cairo," but that road will be neither short nor easy.

Despite the cautionary note sounded by Microsoft and developers alike, it is clear that OLE 2.0 is critical to the future direction of Windows and, more specifically, Cairo.

Major vendors, including Borland International, Inc. and WordPerfect Corp., have said they will support OLE 2.0, although neither Borland nor WordPerfect would comment on how or when.

OLE 2.0 is an object-oriented interface that provides for such services as application automation via a common macro language and "in-place" visual editing and embedding of data objects in documents.

Microsoft officials describe Cairo as the next version of Windows NT, though it is actually an object layer that sits on

OLE 2.0, *page 14*

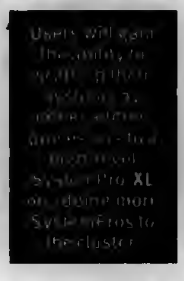
Oracle, Compaq team

Duo seeks to downsize database clusters to PC servers

By Michael Fitzgerald
HOUSTON

■ Compaq Computer Corp. and Oracle Corp. are finalizing plans to develop clustered PC servers running Oracle 7's Parallel Server Option, according to sources close to Compaq.

The agreement, which the sources said could result in product delivery this fall, would focus initially on building high-powered local-area network databases. The plan is expected to be announced next month.



Clustered PC servers would face serious competition out of the chute. Rapidly falling reduced instruction set computing server prices could make those boxes an even more attractive option for downsizing databases. Moreover, building database clusters has proved to be tricky; it took Digital Equipment Corp. and Oracle several tries in the late 1980s to get it right.

Nevertheless, the Compaq/Oracle alliance could have huge implications for users investigating client/server networks. Together the companies hope to place PC servers based on Intel Corp. 1486 or Pentium processors on a more even footing with minicomputers.

"Right now, you don't want to handle a 50G-byte database with a Compaq server, but if I can cluster multiple Compaqs together with Oracle Parallel Server, there is nothing stopping me from putting together a poor man's mainframe," said Peter Kastner, an analyst at Aberdeen Group in Boston.

Ironically, clustering, which DEC used to create systems that rivaled IBM mainframes, should in turn give Compaq the ability to match minicomputers in throughput. Clustering multiple servers would give a PC server more channels through which to send data.

Clustered servers could have major potential for companies that wish to downsize or consolidate mushrooming LAN servers. They could spare users from having to build separate database servers.

"If PC servers are capable of clustering, you're calling into question your investment in a DEC cluster," said Paul Nelis, network specialist at Caisse Nationale de Credit Agricole's U.S. headquarters in Chicago. Credit Agricole now uses multiple VAXclusters.

Other users contacted said they would be interested in looking at clustered PC LAN server technology, but several cautioned that they would want to look carefully to see how the two

Oracle, *page 16*

Intel dominance could derail NT on Alpha train

By Melinda-Carol Ballou
NEW YORK

Digital Equipment Corp.'s effort to regain market share by combining its high-end Alpha chip with the Windows NT operating system is approaching a wall: Intel Corp.'s dominance of the corporate desktop.

> "If we had to decide today, we'd opt for Pentium."
> *—Rich Lansing, vice president, Chemical Bank*

If information systems departments at several blue chip DEC shops are any indication, DEC must deliver on oumerous Alpha promises. For example, while IS managers at several leading banks here are currently evaluating the merits of Microsoft Corp.'s Windows NT oo Alpha, and in most cases are enthusiastic about Alpha's performance, some said they are not sure it is a viable option for several reasons.

First, those users said they may not have room for yet another hardware platform because many now use a mix of Intel

Intel, *page 15*

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HP builds in infrared

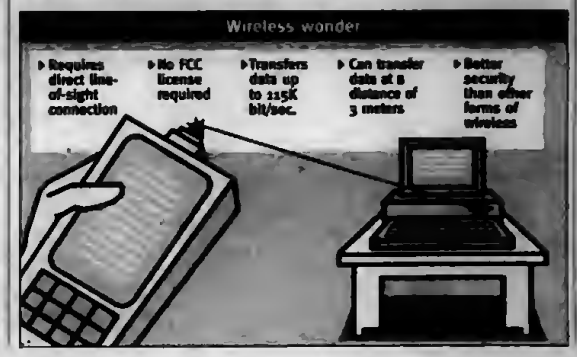
By Michael Fitzgerald
SANTA CLARA, CALIF

On June 1, Hewlett-Packard Co. will become the first company to build infrared technology into its PCs. Some see this move as the first step toward widespread use of infrared as a means of connecting desktop and portable PCs, personal digital assistants, printers and even telephones and automated teller machines. But HP will not be alone for long.

Sources said that near the end of the year Microsoft Corp. will release Mobile Windows, a version of Windows optimized for portable users and featuring built-in data synchronization support via infrared.

Microsoft did not return calls, but HP and Microsoft are already

HP, *page 10*



ALAN LEVENSON

[redacted]

CLIENT/SERVER STRATEGIES

DEC's client/server standing took hits last week as **Compaq** and **Oracle** said they will challenge DEC by jointly developing cluster technology for PC servers. Meanwhile, honchos at several New York banks who are evaluating **Windows NT**-based Alpha systems indicated that DEC will have to work hard to displace **Intel**, especially with its **Pentium**-based systems. *Page 1.* On the tools front, **Bachman Information Systems** tries to shore up its fortunes with a new client/server bent *(page 121)*, while **Texas Instruments** ships **BDF**, a workstation-based business process modeling tool. *Page 24*

DATABASES

A wave of vendor support for Microsoft's **ODBC** and its rival **IDAPI** middleware standard at **DB Expo '93** last week moves user sites one step closer to having any client access any database server, users and analysts said. **IBM**, meanwhile, ships **DB2**'s younger sibling, **DB2/2**, officially entering the desktop database fray. *Page 12.* IBM also said it is on schedule to deliver its parallel processing database management engine and its Posix-compliant version of MVS. *Page 67*

DESKTOP SOFTWARE

Last week was busy for Lotus, as it made a play for higher ground in the **Windows** spreadsheet war *(page 4)* and delivered a **Notes API** to **Microsoft** and **WordPerfect**. *Page 47.* And Microsoft integrated the **Access** database into its Office suite. *Page 4.* Meanwhile, IBM's **OS/2** Version 2.1 is taking shape. *Page 37*

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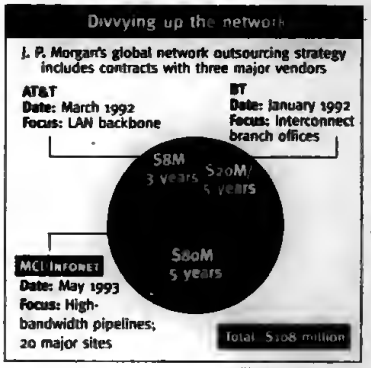
Outsourcing

Banker signs $80M contract with MCI

By Elisabeth Horwitt
NEW YORK

■ J. P. Morgan closed the loop on its overseas network outsourcing strategy last week by signing an $80 million, five-year contract with MCI Communications Corp.

The contract may be the largest of its kind to date, the vendor said. It calls for MCI, partnered with Infonet Services Corp., to implement, manage and maintain the high-speed pipelines that support voice, data and video communications among more than 20 major J. P. Morgan sites around the world.



CW Chart: Janell Genovese

The contract is the third global outsourcing deal the New York financial services firm has signed in the past year and a half (see chart above). Last year, J. P. Morgan chose BT as the provider of an X.25 packet-switched network to support branch office applications and IBM Systems Network Architecture traffic, and AT&T as the provider of its overseas local-area network backbone.

The networks are separate and managed by their respective providers, although J. P. Morgan's networking people get an overview of activity across all three from the network control center in Newark, Del., said Tom Hynd, vice president and head of network services.

The idea behind all three contracts was for J. P. Morgan to be able to provide network services for rapidly expanding overseas businesses and sites without having to significantly upgrade its networking staff, Hynd said.

The company said it expects to realize a savings of 5% to 10% from the MCI contract, primarily by reducing its staff through attrition and reassignment.

Bonus baby

The MCI/Infonet contract is by far the biggest of the three, with the network supporting virtually all of J. P. Morgan's 14,000-plus employees who make international calls, Hynd said.

MCI will supply its leased-line global communications services and deploy Network Equipment Technologies, Inc. switches to link J. P. Morgan sites in North America, Europe, Latin America and Asia.

Infonet will deploy a virtual private network over those links, enabling corporate users to allocate chunks of bandwidth for compressed voice, video and data on an as-needed basis, an Infonet spokesman said. Right now, the sites are connected via a hodgepodge of links provided by various overseas carriers.

The outsourcing contract also provides for rapid provisioning, with a guarantee that the customer can order up to 128K bit/sec. between any two of the 20-odd sites and have it in place within five working days.

Overseas high-speed links typically take up to six months to provision, the Infonet spokesman said.

MCI will provide customer support for overseas users, while Infonet, with its strong presence in various overseas countries, will coordinate problem management and dispatching overseas, Infonet said.

"Where before we were managing 25 [overseas] vendors, now we have one vendor managing 25 vendors for us," Hynd said.

Distributed work loads

Outsourcing to multiple vendors was a definite preference, if not a selection criterion, for J. P. Morgan, Hynd said.

"It communicates clearly to vendors that this is an open, competitive shop and that we award to vendors that provide the best service and best price" on an ongoing basis, he said. Based on experiences with the first two outsourcing contracts, "We see no issue [or problems] with having multiple vendors providing service," Hynd said.

MCI and Infonet won the contract from BT and AT&T on the basis of small differences in short- and long-term cost and the partnership's ability to deploy the right connections in the right places, Hynd said. As with the other two global outsourcing contracts, service-level guarantees with financial penalties apply.

Corrections

• A story in the April 19 issue incorrectly said Tampa Electric Co. would soon start a 1,200-user beta test of Motorola, Inc.'s Site Connect paging system. The utility has not yet approved the test. The $500 per-user cost for a 500-user Site Call module of the system includes a dedicated PC with Unix and application software, a $20,000 paging system with a 2,500-user capacity and a $125 to $300 alphanumeric pager for each user.

• Because of a production error, the last phrase in a story on page 14 of the May 3 issue was cut off. It should have read, "Incorporation of Resource Object Data Manager, IBM's SystemView-compliant, object-oriented database structure, as the basis for enabling applications to share data."

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Software suites

Microsoft Office gets Access

By Michael Vizard
BELLEVUE, WASH

Bowing to large customer and competitive pressures, Microsoft Corp. last week announced plans to expand its Office application suite by adding its Access relational database.

Scheduled for release early next month, the edition of Microsoft Office with Microsoft Access will be priced at $949, which is $199 more than the standard Office package that includes the Word word processor, Excel spreadsheet, PowerPoint presentation graphics software and Mail.

The need to bolster the Office suite with Access is driven by customers who are deploying that database as a query tool for larger databases. For instance, King County Medical Blue Shield in Seattle currently deploys Access on each of its users' desktops because it provides a good query tool for users accessing Microsoft's distributed SQL Server database across the network.

"We've been pressuring Microsoft to do this for three or four months now. It's not a surprise because the only thing really missing from the application suite has been a database," said Richard Boone, manager of technical services.

"Corporate accounts have been telling us that Office is incomplete without a database," confirmed Kathleen Schoenfelder, a product manager for Office.

The Microsoft move follows the signing of a recent suite alliance between Borland International, Inc. in Scotts Valley, Calif., and WordPerfect Corp. in Orem, Utah. Under terms of the alliance, Borland will offer a suite that includes its Paradox for Windows database along with its Quattro Pro for Windows spreadsheet and WordPerfect word processing software [CW, April 26].

> All Microsoft applications will be upgraded to support OLE 2.0 during the next 14 months

In addition to Access, Boone said he expects Microsoft to include its scheduling software in Access because it is also a personal productivity tool. This is a move that Schoenfelder said Microsoft is considering.

The step to include databases in application suites is part of a long-term trend in which vendors will use the technology in a relational database, combined with support for Object Linking and Embedding (OLE), to make suites of applications behave as a single, seamless application.

"I really hope there is a blending of applications. We're anticipating being able to use the Access query functions directly from within an Excel spreadsheet," Boone said.

"Including database technology is really the only way these companies can provide more sophisticated integration features in their suites," noted Krystyna Filistowicz, an analyst at Dataquest, Inc. in San Jose, Calif.

For example, Lotus Development Corp. executives last week disclosed that they will add technology from their Notes offering to SmartSuite to provide better applications integration. SmartSuite consists of the Ami Pro word processor, Lotus' 1-2-3 spreadsheet, Freelance Graphics presentation graphics and CC:Mail.

This will allow users to merge text and spreadsheets across Ami Pro and Lotus' 1-2-3 without having to exit the application, said Lotus chief technology officer John Landry.

That technology will be incorporated into SmartSuite right after Lotus delivers Release 4 of 1-2-3 for Windows next month, according to Jeffrey Beir, Lotus vice president of spreadsheet development.

Microsoft and Borland will counter by relying on OLE 2.0 and their own database technology. Filistowicz said Lotus is likely to enjoy a short-term advantage because OLE 2.0 is still in its infancy [CW, May 3].

Reporter's Notebook

After almost two years of discussion, Lotus Development Corp. last week told attendees at LotusWorld that it has delivered Version 3.0 of its Notes groupware offering. More than 300,000 disks have been pressed.

Developers at Iris Associates, a Westford, Mass.-based Lotus associate responsible for developing Notes, reported that running Notes as a Novell, Inc. NetWare Loadable Module will provide a faster server environment than either IBM's OS/2 or Microsoft Corp.'s Windows NT. In fact, Windows NT is currently only about as fast as OS/2, said Steve Beckhardt, an Iris developer.

Walnut, the Worldwide Association of Lotus Notes Users and Technologists, held its first meeting last week. The association plans to establish a Notes database on CompuServe to link members. This database will replace the Notes database created by the New York Notes User Group.

One of the more daring demonstrations last week was the preview of PictureTel Corp.'s plans to integrate its videoconferencing system within Notes. PictureTel Chairman Norman Gaut established a live link to an IBM office in Paris. While the quality of the transmission left a lot to be desired, Gaut said he was pleased he could even establish the link using beta-test software. "Demonstrating beta software is kind of like bungee jumping naked with grease on your ankles," Gaut said.

Lotus has established Notes alliance partnerships with a large number of work-flow software providers. These companies, which have agreed to layer their software on top of Notes, include Viewstar Corp., Reach Software Corp., Action Technologies, Inc., Recognition, Inc., Delrina Technology, Inc., Portfolio Technologies, Inc., ELF Technologies, Inc., IET Intelligent Electronics Ltd., Quality Decision Management, Inc. and FileNet Corp.

Skytel Corp. in Washington, D.C., said it has integrated its paging system with Notes, and Simpact Associates, Inc. in San Diego said it has integrated its Remark voice recognition system with Notes, to allow users to access a database over a Touch-Tone phone.

Compiled by senior editor Michael Vizard.

Lotus fires back in Windows spreadsheet war

By Michael Vizard
SAN FRANCISCO

Lotus Development Corp. will take significant strides toward restoring its tarnished reputation in the Microsoft Corp. Windows spreadsheet market when it officially launches Release 4 of 1-2-3 for Windows this week.

Scheduled to ship next month, the new version will give Lotus a spreadsheet offering that for the first time takes full advantage of Windows' graphical environment while providing users with a Version Manager feature that simplifies working with multiple copies of spreadsheet data and files.

"This release makes Lotus competitive. It brings them back into the battle," said Daniel Gasteiger, editor of "Spreadsheet Consultant," a newsletter published in Cambridge, Mass.

4 better, 4 worse

Lotus' 1-2-3 Release 4 for Windows: Competitive comparison

In-cell editing	Yes	No
Live status bar for instant access to formats and more	Yes	No
One-step charting	Yes	Yes
Drag-and-drop visual cues	Hand	Arrow
Version tracking	Yes*	No
Many users can contribute data without overwriting work	Yes	Yes
Track work by user name and date	Yes	Yes
DDE/OLE client and server support	Yes	Yes

Source: Lotus Development Corp., Microsoft Corp.

The new release is widely expected to give 1-2-3 users an incentive to adopt Windows. Until now, 1-2-3 for Windows has been a disappointment to most users because it failed to take full advantage of the graphical features in Windows.

As a result, Lotus currently has only a 30% share of the Windows spreadsheet market, compared with 61% for Microsoft, according to BIS Strategic Decisions in Norwell, Mass. This shortcoming contributed heavily to a 41% drop in Lotus' net income for the last quarter as sales of DOS spreadsheet applications, which Lotus dominates, dropped sharply in favor of Windows applications [CW, April 26].

Beta-test users are giving Lotus high marks for the features included in 1-2-3 Release 4 for Windows (see chart).

"The new release is fantastic. There's really nice integration using the [Object Linking and Embedding] functions with other applications. And since all Lotus applications have the same SmartIcons, you can actually forget which application you are in," said Stacy Myers, a senior program analyst at South Florida Water Management in West Palm Beach, Fla.

According to Myers, the major new features in 1-2-3 are improved integration with other Lotus applications, a better interface with Windows, the Version Manager functions and overall better performance.

Lotus will have little time to rest on its laurels because Microsoft is closing in on delivering Version 5.0 of Excel. Also on the horizon is Version 2.0 of Quattro Pro for Windows, which Borland International, Inc. plans to deliver this fall [CW, May 3].

As for those users who have already made the switch to Excel or Quattro Pro, the arrival of Release 4 of 1-2-3 for Windows appears to have come too late.

"I moved to Quattro Pro because it has better macro facilities, and the objects make it easier to program," said the department computer consultant at Sikorsky Aircraft Co. in Stratford, Conn.

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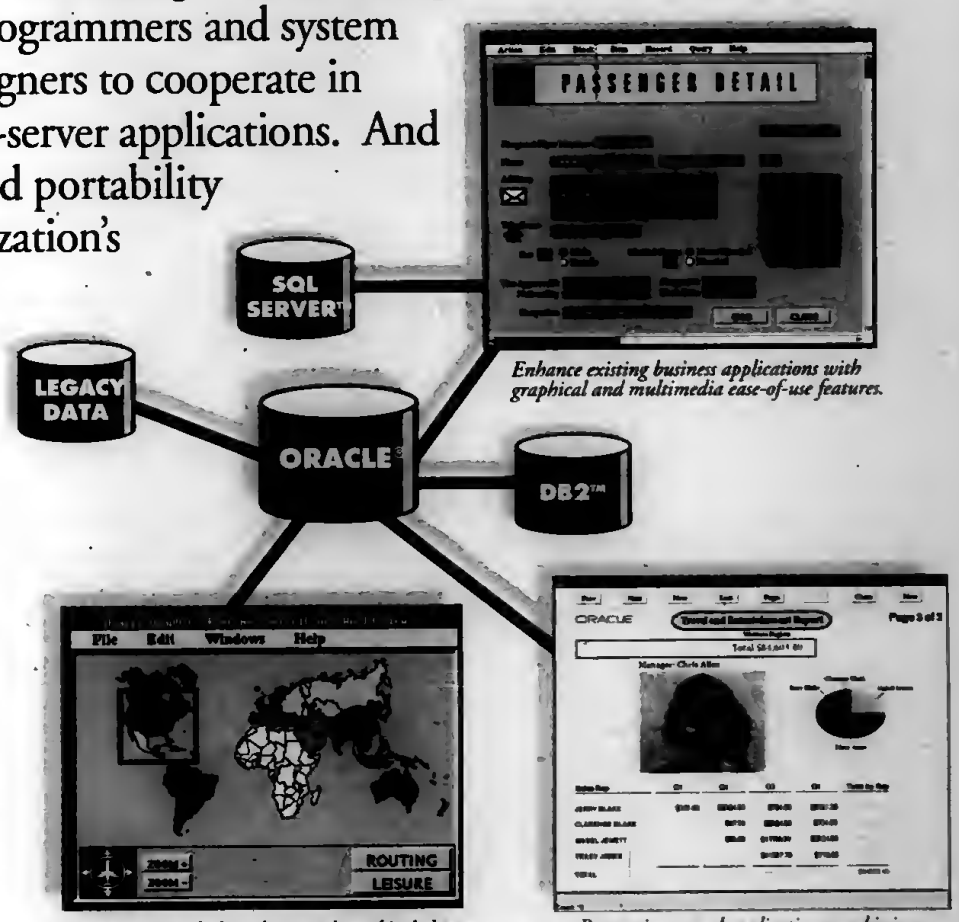

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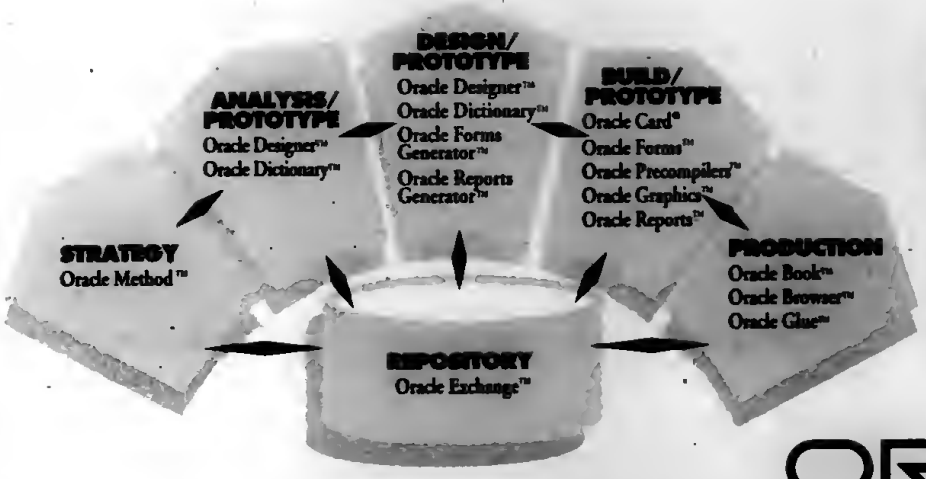

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News Shorts

DOS 6.0 bugs reported

Published reviews and bulletin boards are reporting serious bugs in DOS 6.0. These include problems with MemMaker, the Microsoft Corp. memory optimizer, and DoubleSpace, the data compression utility. The most noticeable complaint is of cross-linked files, which can result in data loss. While some users said the cross-linked files were the result of using DoubleSpace, others indicated they had noticed the problem without the data compression utility installed. Microsoft technical representatives advised customers to check for incompatibility between certain BIOS versions and memory managers. Several users on CompuServe reported that turning off write caching seemed to solve the problems.

HP and Lotus team on portable

Hewlett-Packard Co. and Lotus Development Corp. introduced an updated model of HP's 95LX palmtop computer with a built-in version of Lotus' CC:Mail. Aimed at mobile professionals, the device includes a serial port for printers and modems and an infrared link to HP desktop computers. The $749 HP 100LX features an 80- by 25-character IBM Color Graphics Array display, a 50% faster processor, Lotus' 1-2-3 Version 2.4 and personal information software.

ThinkPad line grows

IBM PC Co. expanded its ThinkPad notebook line, adding models known as the 720 and the 720C. These products feature IBM's 25-MHz/50-MHz 486SLC2, up to a 160M-byte hard drive and support for the new Personal Computer Memory Card International Association 2.01 standard. IBM has also lengthened the battery life by as much as 20% — to 7.8 hours on the monochrome version and 4.8 hours on the color version. Pricing starts at $3,195 for the monochrome 720 with a 120M-byte hard drive. IBM said dealer ThinkPad orders topped 100,000 units the first day.

ComputerLand cuts back

William Tauscher, chairman of ComputerLand Corp., confirmed that the company recently laid off 220 workers in its corporate division and received a $17 million cash infusion from its three major shareholders, including Tauscher. Tauscher also said the corporate division has begun accepting orders over the telephone at two locations, one in Livermore, Calif., and the other in Indianapolis.

New beta NT client ships

Novell, Inc. has begun shipping the second beta release of its NetWare Client for Microsoft Corp.'s Windows NT. Novell hopes that by shipping the NetWare client software to NT beta-test sites, it will get plenty of early feedback on NT/NetWare interoperability. The new release includes Novell's NetWare transport stacks, IPX and SPX II, and a new release of the SPX stack that Novell claims improves network performance and simplifies applications development.

SHORT TAKES Networking vendor Cisco Systems, Inc. reported third-quarter net sales and net income increases of 89% and 99%, respectively, compared with the third quarter of last year.... Computer Associates International, Inc. has begun shipping CA-dBFast 2.0, a dBase-compatible system for migrating Xbase applications to Microsoft's Windows environment.... Joel J. Kocher, president of domestic operations at Dell Computer Corp., won a power struggle with Andrew R. Harris, president of Dell's international operations, and was named president.

News shorts, *page 16*

PC/phone marriage likely

Intel, Microsoft technology will address telephony frustration.

By Joanie M. Wexler
DALLAS

User emancipation from telephone handset tyranny drew nearer last week when a team of vendor heavyweights played matchmaker between the PC and corporate phone switch.

In interviews last week, users revealed a surprising pent-up demand for the combination PC/telephony applications that could emerge from the joint application programming interface (API) that Intel Corp. and Microsoft Corp. said they have begun shipping [CW, March 1].

Such applications could ultimately render the telephone handset an endangered species, one user said. Others said that merging phone and PC user interfaces would spur broader use of their companies' sophisticated telephone system features.

The users anticipated that having fewer telephone codes to memorize or look up would translate into time savings — benefits that are "more than just toys," one PC specialist said.

"Heck, I'm chief technologist, and I have my secretary come in and set up my conference calls!" admitted Bill Conley, manager of corporate information systems at Loral Aerospace Corp. in Newport Beach, Calif.

Complicated calling

"We have a variety of PBXs, which all have about the same 120 functions. But most of us use only the same 12 of them", because it is too complicated to figure out how to use the others, Conley said. "Marrying [PC and phone] interfaces so you'd click on icons to place calls and consolidate electronic and voice mail definitely has potential."

A similar API slated to ship in the second half of this year is in the works by networking higwigs AT&T and Novell, Inc. Unlike last week's announcement, though, the AT&T/Novell API announcement received a lukewarm response [CW, Jan. 11], indicating that users can envision better benefits to linking individual PCs and phones than server-to-PBX connections.

"In our company, individuals simply have trouble getting phones to do what they want," noted Mike Field, microcomputer coordinator at James River Dixie Corp. in Fort Smith, Ark. "If users could select from a menu to forward their calls when they go on vacation — instead of looking up a numeric sequence in a book — that would be a big time-saver."

"My phone has 19 buttons on it besides the keypad, and I haven't a clue what to do with them," added Joe Giljohann, senior microcomputer specialist for the city of Milwaukee. "We need one manageable PC/telephony package."

Stash Jarocki, vice president and audit director in the technology support and research group at Citibank NA in New York, said he sees potential for integrated PCs and telephones, though he has reservations about conflicting APIs.

"A common suite of APIs is nice, but now we have competing APIs" from the Microsoft/Intel and Novell/AT&T camps.

"Any time you have Microsoft on one side and anyone else on the other, you automatically have technology wars," which could stall progress, Jarocki said.

However, both sets of vendors claim their efforts to be "complementary." AT&T and Novell participated in the design review for Intel/Microsoft's Windows Telephony, and Sanford Brown, an AT&T marketing manager, said, "Our vision is some level of API commonality so we can eventually achieve application portability."

Interface wars aside, Conley said he would be willing to pay "under $100" for a telephony-enabled PC application. Field said he would pay $80 to $150 for a software-only solution but would go to $250 per user if add-ons were required for the PBX.

"What really might make this fly is if you got a site license when you got a new PBX — like the way PC makers throw in DOS and Windows," Conley suggested.

Point-and-click telephone

PBX maker Siemens Private Communications Systems Group/Rolm has already announced an application that supports Windows Telephony. CallBridge for Desktops allows Windows users to tap caller identification, conference calling and call time-tracking features. Among the 40 other vendors planning to develop products to the interface are Alcatel Business Systems Group, Compaq Computer Corp., Digital Equipment Corp., Ericsson Corp. Lotus Development Corp. and Northern Telecom, Inc.

PC talk

A standard API for merging desktop and telephone applications could enable users to do the following:

- Navigate through the mire of complicated telephone features, such as call forwarding, conferencing and transfer, using PC point-and-click commands.
- Check just one mailbox for all E-mail, voice mail and fax; manipulate voice mail at leisure, in nonsequential manner as with E-mail.
- Link directly to a WAN for transmitting voice and data.

Now hear this

Linking computers and telephone switches — technology called "computer-integrated telephony" (CIT) — has been provided for years in corporate call centers by vendors such as IBM and Digital Equipment Corp.

Traditionally, CIT vendors have created proprietary links between a specific PBX and a mainframe or mid-range host.

While the applications have been critical in the niches used, the big-system technologies have not enjoyed the growth boom predicted for CIT on the desktop, observers noted.

This is because they have been reserved for "those who can pay big bucks and have the traffic to justify it," said Ameet Patel, emerging technologies analyst at BASF Corp. in Parsippany, N.J.

BASF plans to test CIT for its local-area network servers from Novell and AT&T as well as other similar technologies.

"Most application development now is on the desktop, so from the user perspective, that is where [CIT] would be most beneficial," Patel said.

—Joanie M. Wexler

Novell sells 3270 line, addresses NetWare messaging

By Elisabeth Horwitt
PROVO, UTAH

Novell, Inc. said last week that it will partner with Attachmate Corp. in an effort to fill some gaps in Novell's enterprise messaging and NetWare-to-host product line, which includes NetWare for Systems Application Architecture (SAA).

In addition, Novell said it has sold its low-end IBM 3270 client software business to Attachmate. This move will enable Novell to free more resources for development of its far more strategic (and profitable) NetWare for SAA product, a company spokesman said.

Novell and Attachmate will work jointly on NetWare Loadable Modules (NLM) that incorporate pieces of Attachmate's ZipOffice electronic mail, calendaring and scheduling systems. Out of that development will come the first scheduling and calendaring capabilities for Novell's Global Message Handling System (MHS), Novell said.

This "makes great sense because one of the things people have most trouble surrendering when they move off the host E-mail system to the LAN is calendaring and scheduling," said Walter Ulrich, a director at consulting firm Arthur D. Little, Inc. in Los Angeles.

Access to functions

The partnership plans to extend existing MHS application programming interfaces (API) so that any third-party application written to those APIs can automatically gain access to calendaring and scheduling functions, Novell said.

Attachmate will develop NLMs that will enhance Novell's NetWare for SAA, MHS and NetWare 4.0 products in areas such as network management and transparent access to IBM host E-mail systems. Zip:Office provides links between local-area network E-mail and IBM's Professional Office System.

Florida State University, a current NetWare and Zip:Office user, is planning to implement NetWare for SAA shortly. It would be a "big cost benefit" to be able to implement both packages as NLMs on the same NetWare server instead of on separate servers, said Bob Graves, assistant director of office computing at the Tallahassee, Fla., university.

NetWare for SAA is an NLM that links LAN clients to a variety of IBM host environments, including IBM 3270 and 5250 terminal connections and IBM LU6.2 program-to-program communications.

Growth expected

Novell is now shipping approximately 2,000 NetWare for SAA servers per month and expects business to grow 25% to 30% per quarter, a company spokesman said.

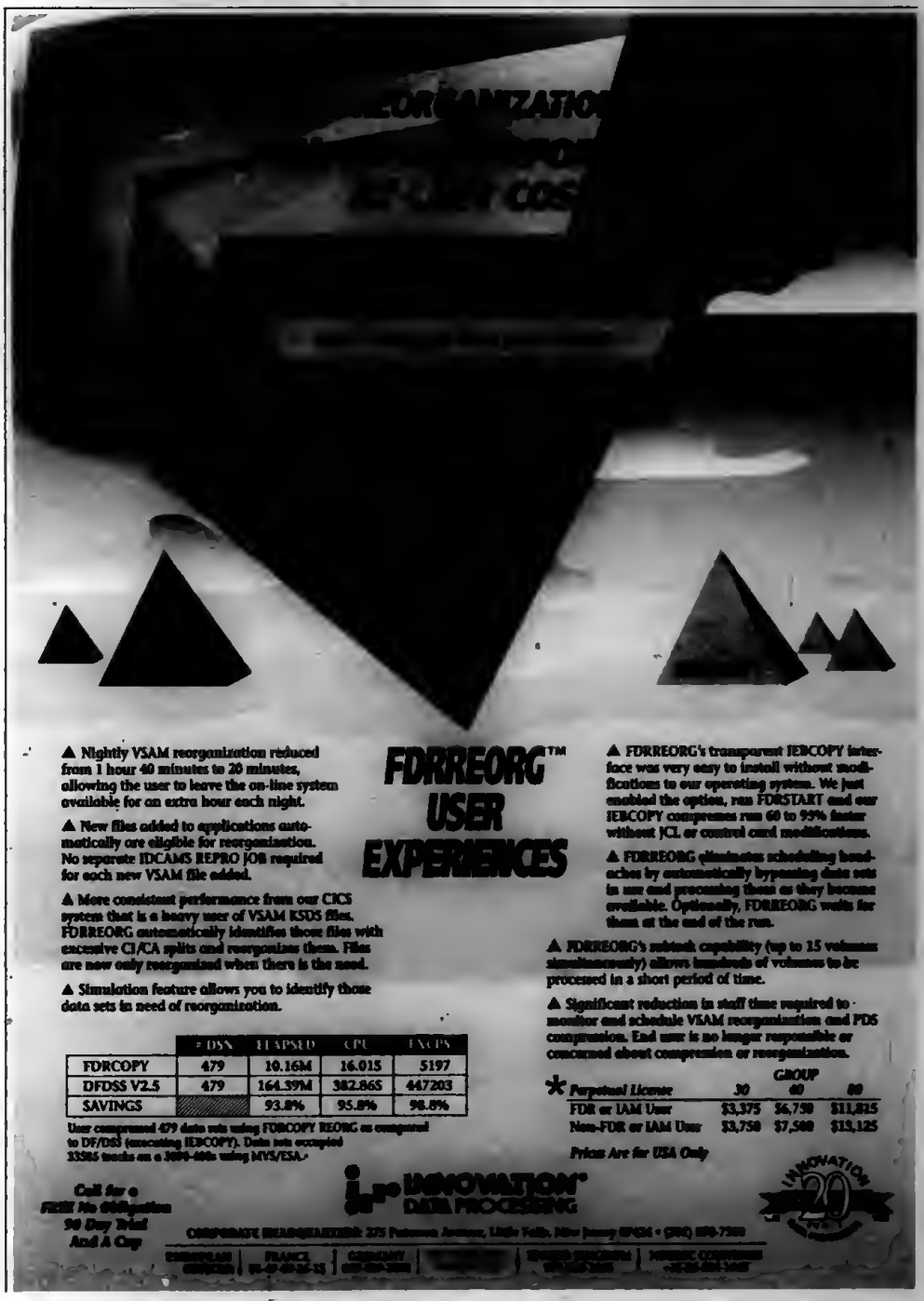
Novell is working on enhancing NetWare for SAA to support, among other features, load-balancing across multiple NetWare for SAA servers and host connections, a spokesman said. Also in the works is a bot standby feature that will switch user traffic from a downed link to a backup line, gateway server or host before the session is lost.

Novell is also in the process of integrating NetWare for SAA with NetWare 4.0 naming services so that NetWare servers can transparently connect users to the right host across the enterprise, the spokesman said.

Novell said it plans to make the client portions of this software available to third-party 3270 client vendors whose products work with NetWare for SAA.

Novell's exit from the 3270 client market will encourage third-party vendors to develop more client products for Novell's LAN-to-host gateway, a Digital Communications Associates, Inc. spokesman said. Last week, the Norcross, Ga., vendor announced Irma NetWare WorkStation for Windows, a Microsoft Corp. Windows-based 3270 emulation software package designed specifically to work with NetWare for SAA.

Digital Communications Associates, a NetWare for SAA reseller, will offer five copies of the new Irma product free with each purchase of NetWare for SAA through year's end.



486 subnotebooks loom on the horizon

Manufacturers ready their shipments as the need arises for powerful but compact portable systems

By Michael Fitzgerald

Compudyne, CompUSA, Inc.'s manufacturing arm, will ship a 486SL-based subnotebook and a high-end notebook on May 20, confirmed Kevin O'Brien, a Compudyne product manager.

Later this month, Northgate Computer Corp. will introduce a 3.3-pound subnotebook and the ZXPortable Dual-Scan, a 6.3-pound, passive-matrix color notebook. Dual-scan screen technology means the video display refreshes at roughly twice the speed of conventional passive-matrix screens, eliminating some of the problems found in passive-matrix notebooks, such as cursors that seem to disappear.

The moves indicate that vendors, trying to fill every user niche, are bifurcating and expanding their product lines.

This push seems to be responding to user needs. "We've seen a couple of different classes of users [develop]," said Carrie T. Ulvestad, national manager of dealer communications at Hyundai Motor America headquarters in Fountain Valley, Calif.

Equipment in the field

Ulvestad said she expects to give her traditional notebook users — field sales representatives — high-powered Intel Corp. 1486-based notebooks next year and may give less powerful, lighter systems to executive users.

The $1,999 Compudyne 486SL/25 Subnote measures 7.1 by 10 by 1.6 in. and weighs 3.6 pounds. It joins the new Contenda 486 from Zeos International Ltd. as the first 1486-based subnotebook. The product includes a Personal Computer Memory Card International Association Type II slot, a removable 80M-byte hard drive and a trackball.

Shrinking notebooks

Of the major notebook vendors, only Zenith Data Systems has broadened its product line to include subnotebooks. Smaller players, such as Dell Computer Corp. and Gateway 2000 Ltd., have been the most aggressive in moving into this realm. Gateway last week cut prices by $300 on its 2.9-pound Handbook PC, which now costs $995.

Compudyne's other entry, the 5.8-pound 486DX2/66 Color Slimnote, is aimed at portable computing's version of the highly profitable Holy Grail: the desktop replacement market.

Based on Intel's most powerful 1486 chip and costing $4,999, the Slimnote has a 210M-byte hard drive and an expansion station but only an 8½-in. active-matrix color screen. O'Brien said Compudyne will ship a version of this with a 330M-byte hard drive next month. A monochrome version costs $2,999. Both boxes are made for Compudyne by Twinhead Corp. in Taiwan.

"You have vendors taking different tacks and trying to differentiate themselves. As portable componentry becomes less expensive, it gets cheaper to diversify, and the Taiwanese can start to get into the market," said Janet Cole, analyst at Dataquest, Inc. in San Jose, Calif. This should lead to lower prices and the broader distribution of certain products, Cole added.

Northgate's Dual-Scan is based on Intel's 25-MHz 486SX and offers a 120M-byte hard drive and 4M bytes of random-access memory. The product will cost $2,500.

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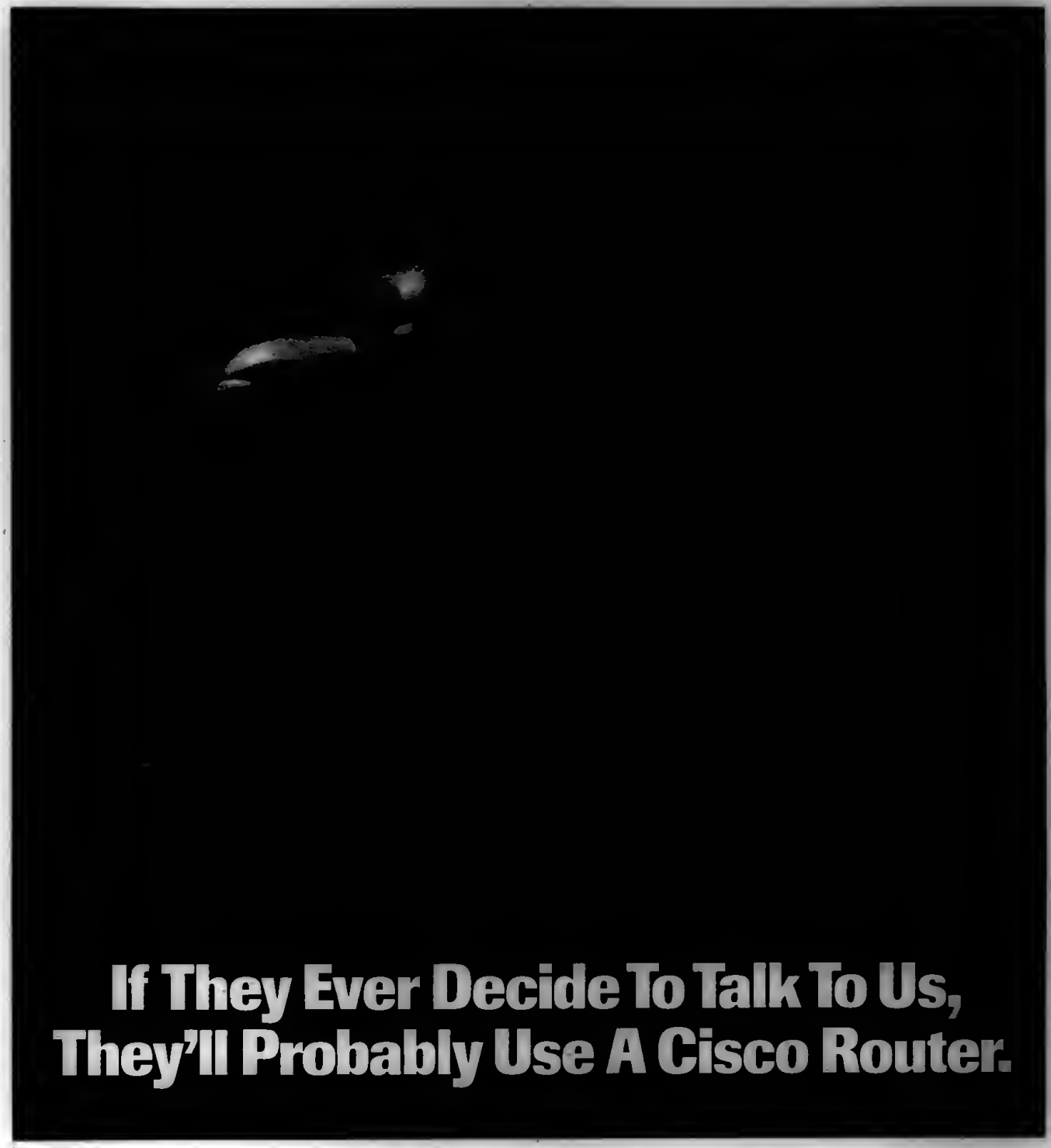

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OpenView goes beyond SNMP

HP's OperationsCenter offers multivendor systems management

By Elisabeth Horwitt
PALO ALTO, CALIF

Hewlett-Packard Co. threw its OpenView hat into the systems management ring last week with the announcement of OperationsCenter. The product is said to extend HP's platform beyond Simple Network Management Protocol-based network management to the management of HP, IBM and Sun Microsystems, Inc. Unix workstations.

OperationsCenter is based on a client/server architecture that equips managed systems with intelligent agents that can respond to network alerts locally or send them elsewhere. This distributed form of management, which is used by competing products such as IBM's NetView/6000 Systems Monitor, is said to be far more scalable than traditional centralized systems.

HP's PerfRX, *a new OpenView application, analyzes system performance trends over the long term*

OperationsCenter may represent a breakthrough, however, in the way it uses distributed intelligence to give the system administrator "more flexibility in how we control the flow of information about performance and overall operation," said Marguerite O'Brien, manager of systems management development at Mead Data Central, Inc. "We thought we'd have to wait until 1994 [for such capabilities] or develop it ourselves."

O'Brien also praised the product's tools for proactive event management, including "filtering and taking automatic action in response to network events."

Automatic response

HP incorporated into OperationsCenter a "process-oriented view" that enables users to define procedures for responding to typical network situations, said Jeff Thieman, HP's OpenView program manager. For example, a local node can automatically respond to a system failure, check with a network administrator before taking action, call up HP Network Node Manager to find out whether the failure is network-related or send the alert to a human operator.

Mead Data will seriously consider OperationsCenter as the management system for a mixed bag of Unix systems inside the data center and eventually across the enterprise, according to Bill Fuson, director of delivery services at the Dayton, Ohio-based information service provider.

Users were less clear about HP's offer to integrate their systems and network management under one OpenView umbrella.

Mead Data would like to integrate its system and network management on one platform, Fuson said. Right now, the firm is using NCR Corp.'s StarSentry network management system.

Pitney Bowes, Inc., a user of the OpenView network management system, plans to evaluate OperationsCenter as a Unix systems management platform, said George Billings, manager of network computing services. "Right now, I believe data center people are managing individual boxes with no centralized management except backups."

OperationsCenter also provides links to third-party applications running under OpenView so, for example, the systems manager can notify a trouble-ticketing application of an alert. OperationsCenter intelligent agents are equipped with open application programming interfaces so that legacy management applications can hook into them, Thieman said.

HP plans to provide OperationsCenter management of other Unix systems, with Digital Equipment Corp.'s Ultrix being "a good candidate," Thieman said.

OperationsCenter is priced at $14,700 for a 12-node, 32-user environment. It is scheduled to ship in August.

HP builds in infrared

CONTINUED FROM PAGE 1

cooperating on the OmniBook 300, a 2.9-pound "super portable" that includes HP's Serial Infra-Red technology. It will hit the market on June 7, according to sources.

In addition, IBM is interested in infrared and may join with HP if its standards effort can accommodate IBM's faster infrared technology.

According to analysts, infrared, which acts as a point-to-point wireless data path, will appeal to portable and handheld computer users because it will give them the ability to easily transfer and update data between multiple PCs. It also eliminates cables, which users "hate," according to Leslie Fiering, an analyst at Gartner Group, Inc.

In with infrared

HP confirmed last week that its future PCs will come standard with infrared (its 95LX and 100LX palmtops already have it), and its printer group said it was considering building in infrared. HP LaserJet users can purchase an infrared add-on from Extended Systems, Inc. in Boise, Idaho. HP also said it will license its Serial Infra-Red technology to other companies. Infrared "has just recently become much more accurate, and HP could play a leadership role here," said Tim Bajarin, president of Santa Clara, Calif.-based Creative Strategies Research International, Inc.

Adding infrared should not cost end users much, said John Romano, research and development manager at HP's personal information products group. Romano said infrared can be built into a PC for as little as $1.

Because of the cost and technology factors, "the time is right for infrared, and if HP can get some buy-in on this technology, infrared could be completely standard on PCs by the end of the year," Fiering said.

Users expressed interest in the technology.

"I like the idea, and in my opinion it's an enabling technology; if the software is done right it creates a lot of possibilities," said Joseph Barrett, lead technical analyst at Whirlpool Corp. in Benton Harbor, Mich.

Barrett agreed that cables deter portable users from transferring data but cautioned that without "intelligently done" software, perhaps at the application programming interface level in the operating system, infrared might just be another kludgy method of data transfer.

"You need to be able to just walk near your desktop with a portable device and have the file get updated, without calling up any programs," to make infrared data transfer work, Barrett said.

Analysts said that while some sort of middleware is needed to realize true synchronized data exchange between PCs, "the first step is a physical infrastructure, and that's what HP is trying to create here," Fiering said.

While infrared is one of several wireless technologies being considered for local-area networks, Romano said HP has little interest in using infrared for connecting LANs. Sources said HP's new LE and LM server lines, due out next Monday, will not have built-in infrared.

Romano said, however, that HP has discussed licensing agreements with phone companies, which are interested in it for both cellular and regular phones. This could enable users to send data files without cables and could make using a cellular phone less of a task.

Wireless LANs

Infrared device links sites up to a mile apart

By Lynda Radosevich
LANCASTER, PA

Laser Communications, Inc. last week unwrapped network connectivity devices that can link local-area networks between buildings up to a mile apart without wires. Using laser infrared beams, the devices, which will ship in September, can transfer data at network speeds of up to 16M bit/sec., the company said.

Aimed at network managers in campus-style building complexes, the infrared laser connection is a wireless option to leasing lines from telephone companies or installing private cabling.

The new series increases operating distance from a half mile to a mile, said Michael Berman, vice president at Laser Communications. To operate, however, the devices require a direct line of sight.

Preferable to T1

Nick Blazensky, director of site design at Travelers Insurance Co. in Hartford, Conn., said he would like to connect networks in four of the company's 12 buildings using infrared laser technology. The buildings are across streets, and Travelers does not have permission to use the phone-line conduits, so the company must lease T1 circuits "that slow the line down considerably," he said.

Other wireless building-to-building connections, including microwave and spread-spectrum radio frequency, have limitations that laser infrared does not have, said Eric Zimits, an analyst at Volpe, Welty & Co., a San Francisco investment banking research firm. For example, microwave bandwidth must be licensed by the Federal Communications Commission and is subject to radio interference. Spread spectrum has limited data transfer rates and distances.

However, infrared laser connections comprise a small portion of wireless building-to-building connections, most of which are microwave connections, said Ira Brodsky, president of Datacomm Research Co. in Wilmette, Ill. Additionally, infrared links can be disturbed by heavy rain, snow or fog, Brodsky said.

The $18,500 Ethernet system, $24,000 Token Ring system and $28,000 Quad T-1 system prices have "a long way to go" before they are in line, Blazensky said.

Most users of infrared laser building-to-building network connections are located overseas, where governments that own the telecommunications companies do not allow use of microwave connections to bypass leased-line connections.

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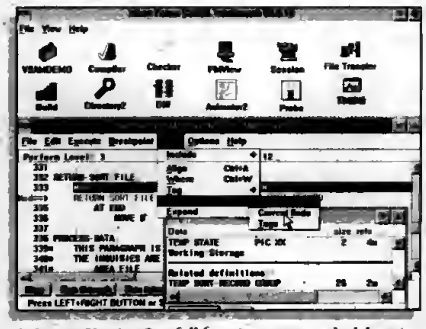

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IBM enters desktop DBMS fray

By Johanna Ambrosio
SAN FRANCISCO

IBM's recently launched Unix database is gaining acceptance at true Blue shops but may have trouble breaking into firms that have adopted a multivendor stance, according to users and analysts.

IBM used last week's Database Expo here to drum up support for DB2/2, available now. First it announced a onetime charge of $199 until Aug. 31. Then it revealed some 25 third-party vendors that are supporting DB2/2 with their applications, including Easel Corp.'s Easel Workbench, Powersoft Corp.'s PowerBuilder and Gupta Corp.'s SQL Gateway.

Further, IBM is shipping Distributed Database Connection Services/2, software designed to help connect database applications across multivendor platforms. IBM also said that on June 27 it will ship software, dubbed Databub, said to help users manage databases throughout an enterprise.

DB2/2 is being positioned as a desktop version of DB2. Another version, for the RISC System/6000 workstation [CW, March 15], will ship in late July.

Initial DB2/2 beta-test users were all DB2 shops that said they are using DB2/2 to help roll out client/server applications.

But whether IBM can succeed outside its DB2 installed base is up for debate. Omri Serlin, president of Item International, Inc., a consultcy in Los Altos, Calif., said he is unsure. "DB2/2 will likely do well in DB2 shops, but how it will do in the real world of PCs is a question in my mind."

Token effort only?

How hard IBM will target users outside its DB2 installed base is also a question.

Thomas Aser, assistant general manager for marketing for IBM's Programming Systems line of business, acknowledged that the first "major market opportunity is DB2 shops which want to go to client/server."

On the other hand, Aser said, "Every OS/2 user who needs a database is a potential client." The product does not target the single, casual user, he added.

Users at DB Expo '93 said they would give DB2/2 a chance, although for some it is too late.

"We already have Ingres in my department," said Dana Bourgeois, a systems administrator at Westinghouse's Marine Division in Sunnyvale, Calif.

Dwight Irving, a product manager at Automatic Data Processing, Inc in Roseland, N.J., said his company is looking at DB2/2 but has not made a firm decision to buy. Similarly, he said, his group is "playing around" with Database Manager, DB2/2's predecessor product.

Beta-test users, for their part, said they like what they see so far. Jim Gutschow, director of technical services at ARA Services, Inc. in Philadelphia, said he is using DB2/2 to off-load some small DB2 applications from the company's 3090-180E mainframe. "We've been using Database Manager since 1990 for some small to medium-size applications," he said. "DB2/2 will allow us to implement some larger applications on the LAN."

He added, "For us, DB2/2 was a natural because we needed compatibility with the mainframe."

Similarly, the Royal Bank of Canada in Toronto is using DB2/2 for client/server applications, of which some work cooperatively with the mainframe and some do not. "We needed something with a high degree of stability and integrity and recoverability, and DB2/2 has them," said Jim Montgomery, manager of technical planning.

IBM hopes to entice corporate customers with a new pricing structure for its desktop database products. Users can license 10 copies of DB2/2 for $700 per month or pay a onetime charge of $2,495. A similar pricing model applies to Distributed Database Connection Services/2.

DB Expo '93

DBMS APIs ease client access

By Jean S. Bozman
SAN FRANCISCO

The goal of seamlessly connecting any client to any database server is still a few years away. However, users and analysts attending last week's DB Expo '93 said a wave of vendor support for Microsoft Corp.'s Open Database Connectivity (ODBC) application programming interface (API) is a major step in that direction.

But the ideal "any client, any server" environment would require all major database and PC vendors to support either ODBC or rival Integrated Database Application Programming Interface (IDAPI) from Borland International, Inc., IBM, Novell, Inc. and WordPerfect Corp.

Vendors are lining up slowly behind the options, however. Apple Computer, Inc., Tandem Computers, Inc. and The ASK Group, Inc.'s Ingres Products Division used the show to throw their weight behind ODBC. Microsoft also added ODBC support to its FoxPro 2.5 Xbase, a feature that will ship by next month. Microsoft said more than 70 vendors support ODBC.

"ODBC is becoming a de facto standard," said Donald Feinberg, a software analyst at Gartner Group, Inc. in Santa Clara, Calif. "Apple's support for ODBC sewed it up. It's a standard that gives you any client to any server as long as they're connected with ODBC."

More than 50 vendors have said they will support IDAPI. Some, including Oracle Corp. and Gupta Corp., also support ODBC.

Both ODBC and IDAPI are based on the SQL Access Group's Call Level Interface. Like ODBC, IDAPI supports SQL queries but adds support for non-SQL desktop databases.

Limits and confusion

While ODBC uses spreads, some analysts contend it is limited as a low-level connectivity tool. "ODBC's only going to be effective for decision-support applications because it will not allow you to pass a proprietary request through to the database server," said Jeff Tash, president of Database Decisions in Newton, Mass.

Show attendees said they are encouraged by the growing middleware support from vendors but are often confused by conflicting standards. "People feel confused and overwhelmed because there's too much marketing information floating around," said Richard Yu, director of data administration at MCA, Inc./Universal Pictures in North Hollywood, Calif.

It will take several years for a more complete client/server infrastructure to evolve at most sites, said Colin White, president of Database Associates in Morgan Hill, Calif., and DB Expo '93 conference chair.

Until ODBC and IDAPI become widely installed, users will have to choose high-performance database gateways between specific databases or general, low-level access to all databases. "Open systems promises that any client can connect with any server," White said. "But it's a trade-off today."

Last one in . . .

Apple said it is shipping a software developer's kit for ODBC development; previously, it had placed ODBC support in the Apple-proprietary Data Access Language product. Tandem said it will deliver support for ODBC support for its NonStop SQL database this year. The ASK Group's Ingres Products Division said it has shipped the first ODBC driver for a database server, which was confirmed by Microsoft ODBC product manager Lowell Tuttman.

Reporter's Notebook

Users attending a session on 32-bit operating systems were asked by panel host Jeff Tash, president of Database Decisions, to choose their favorite by standing up and applauding. IBM's OS/2 did OK, Microsoft Corp.'s Windows NT did better, and Unix did even better. But the biggest applause went to a fourth selection: toning down vendors' marketing claims about these operating systems.

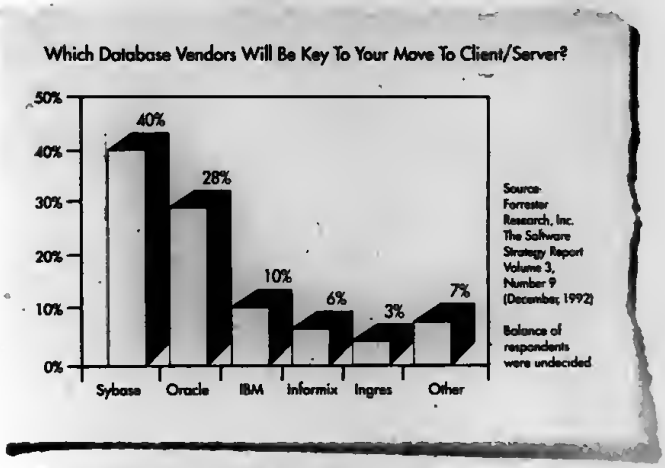
To bring about the vision of "information at your fingertips," Microsoft will eventually have to quadruple the size of its operating system from today's 3 million to 4 million lines of code. Those extra lines of code will handle objects, data replication, voice processing, natural language interfaces, business rules, electronic mail, networking and security, Chairman Bill Gates said.

Borland International, Inc. Chief Executive Officer Philippe Kahn gave his Wednesday morning keynote at DB Expo '93, then rushed across San Francisco to the announcement of Sun Microsystems, Inc.'s Windows interface for Unix systems, dubbed WABI. Seemingly not even out of breath, Kahn joined a question-and-answer session about the potential market for Windows applications on Unix workstations. "It's a way for us to play in a huge market where we have not been playing," he explained.

Lots of new products were announced, demonstrated and displayed at DB Expo. Among the highlights were the following: A new client/server version of Blyth Software, Inc.'s Omnis 7.0 database and development tool supports collaborative development of graphical user interface applications. . . . Andersen Consulting revamped its Foundation tool kit for client/server applications. . . . Raima Corp.'s new database server supports fault tolerance and on-line transaction processing. . . . Apple Computer, Inc. announced that its Data Access Language software would support Transmission Control Protocol/Internet Protocol. . . . Andyne Computing Ltd. announced Pablo, a reporting tool that extracts data from database servers for colorful presentation through charts on Apple Macintoshes. . . . Uniface Corp.'s new interface driver supports Borland's InterBase database. . . . Micro Decisionware, Inc. gateway products that link PC local-area networks and IBM DB2 databases will now connect to Oracle Corp.'s databases and Gupta Corp.'s SQLWindows and Quest tools. . . . Meanwhile, Gupta announced gateways to databases from Informix Software, Inc. and The ASK Group, Inc.

Overheard in the corridor at DB Expo's phone bank: "Marketing wants to give us more data? Tell them we don't need no stinking data."

The analysts have graphed the future of Client/Server computing.



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Sun, Microsoft tangle over Windows on Unix

By Jean S. Bozman
SAN FRANCISCO

The edges between computing environments blurred a little last week as Sun Microsystems, Inc. formally announced its Windows Application Binary Interface (WABI) software, which is said to allow users to run Microsoft Corp. Windows applications on Unix workstations equipped with the X Window System [CW, May 3].

Microsoft, meanwhile, parried with plans to make Windows application programming interfaces (API) available on both Unix and Apple Computer, Inc. Macintosh platforms.

Users hailed the twin moves by Sun and Microsoft as good news because many want to distribute standard Windows applications throughout an organization, whether they are displayed on a PC or a Unix workstation.

Until now, users have paid a premium for recompiled Unix workstation versions of Windows spreadsheets and word processors. Many use emulation packages that host Windows applications on top of MS-DOS on top of Windows, causing system overhead that slows processing.

However, the Sun and Microsoft initiatives differ in that Sun is asking developers to run software binaries on top of Unix, while the Microsoft option gives developers the ability to port Windows source code to Unix.

The Microsoft approach should yield better performance because it allows Windows source code to access native compilers on reduced instruction set computing (RISC) systems, which will bog down performance, said Jeff Elperer, vice president of marketing at Machine Independent Software Corp., a San Francisco provider of tools that help migrate Windows applications to Unix. The Sun approach, however, makes it easier to move Windows applications to Unix because developers will not have to recompile source code.

Sun Chief Executive Officer Scott McNealy and Microsoft Chairman Bill Gates both argued that their Windows-on-Unix solution was superior. "What WABI allows you to do is throw RISC horsepower at what previously had been Intel-landlocked application environments, so now you're not stuck on 386s and 486s," McNealy said.

Gates said customers would have to decide for themselves which company would sell the best version of Windows: the company that wrote the original or a company forced to clone it from the ground up.

Unix opens wider

Some of the most popular Windows applications are being certified to run on WABI

Aldus PageMaker
Borland Paradox, Quattro Pro
Corel CorelDraw
Datastorm Technologies Procomm Plus
Lotus 1-2-3, Ami Pro
Microsoft Word, Excel PowerPoint, Project
Software Publishing Harvard Graphics
WordPerfect WordPerfect

Microsoft's approach will rely on products developed by Insignia Solutions, Inc. in Mountain View, Calif., which will be based on libraries from Bristol Technologies in Ridgefield, Conn., that allow the Windows API to run on Unix.

Paul Maritz, Microsoft senior vice president for systems software, downplayed Sun's ability to run Windows applications without access to source code, saying such development does not come cheap. "It's expensive to be in the cloning business," he said.

Users, meanwhile, appeared positive. "WABI promises to allow us to run the same set of applications on all of our desktop platforms," said William R. Berry, a staff exploration systems analyst at the Amoco Production Co. in Houston.

"I just want to have a choice," added Don Bagwell, a database analyst at the Assemblies of God church headquarters in Springfield, Mo.

Users will obtain WABI by buying system software from SunSoft and other Unix vendors, including IBM, The Santa Cruz Operation and Unix System Laboratories, Inc. Sun said WABI will be bundled into the Solaris 2.2 operating system.

West Coast correspondent Christopher Lindquist and senior editor Michael Vizard contributed to this report.

Apple, Lotus offer OLE-like protocols

By Michael Vizard and Melinda-Carol Ballou

While Microsoft Corp. touts Object Linking and Embedding (OLE) 2.0, Apple Computer, Inc. and Lotus Development Corp. are trying to drum up support for protocols that provide the same functions as OLE on Unix and Macintosh systems.

Apple's equivalent to OLE, which has the backing of Novell, Inc., has been dubbed Exemplar. According to Bill Hawkins, systems architect at Interleaf, Inc. in Waltham, Mass., Exemplar will provide the same type of functions as OLE across networks consisting of Apple, Novell's NetWare and Unix systems. Hawkins was briefed on Exemplar by Novell.

OLE, by contrast, does not yet support linking and embedding services across the network. But Microsoft is working on adding this capability [CW, May 3].

In the meantime, Lotus is building a Link, Embed Launch to Edit facility that provides OLE-like functions on Unix systems, according to Imran Qidwai, Lotus' development manager for Unix.

> The Object Management Group will define an object request broker service for distributing objects

Developers are looking to these initiatives to make it possible to integrate applications across diverse platforms and networks.

"It would certainly make our jobs a heck of a lot easier, especially in a client/server environment," said Alistair Jacques, director of support and development at Northwest Airlines, which relies on a Macintosh environment for flight operations control.

"The Apple guys are not going to try to fight Microsoft on a single machine but are saying, 'Let's try to take the high ground on networks and try to subsume OLE in doing so,'" said John Rymer, an industry analyst at the Patricia Seybold Group in Cambridge, Mass.

Thus far, IBM, which already has an OLE equivalent in beta testing for OS/2 and AIX called Distributed System Object Model, and Digital Equipment Corp. are among the vendors reportedly considering adoption of the Exemplar technology.

However, Apple is not expected to deliver Exemplar until this fall at the earliest, which means applications that make use of Exemplar technology probably will not arrive until 1994.

Due in the second half of this year, the Lotus facility is functionally equivalent to OLE 1.0 and is compatible with PC applications that support OLE, Qidwai said. A version of Borland International, Inc.'s Ami Pro for Unix that supports this facility will be available in the second half of this year, he said.

"We had to build our own facility because OLE is not distributed across systems on a network yet, and the Apple facility is a future," Qidwai said.

Senior West Coast correspondent Jim Daly and West Coast correspondent Christopher Lindquist contributed to this report.

OLE to pave road to 'Cairo'

CONTINUED FROM PAGE 1

top of the operating system's kernel. It will include an object-oriented file system, distributed object management and an updated user interface. Its underlying technology, including its Component Object Model, will be based on the OLE 2.0 application programming interface.

Developers were told that making the shift to OLE 2.0 now would make the move to Cairo far easier than having to start from scratch later. That is because their applications would already be able to take better advantage of Cairo's object-oriented features, including the file system. Also, their developers would have spent time making the leap to Microsoft's way of dealing with objects — something it said would not be easy. So much so that Microsoft fed developers predictions of a dim future for anyone who does not start developing applications that support the software giant's method for linking and embedding data objects in applications.

OLE 2.0 "will become one of the most central mechanisms in our operating systems," said Paul Maritz, Microsoft's senior vice president for systems software. That could result in independent software vendor products not being competitive in the next 12 to 18 months in the Windows NT arena if they do not support OLE 2.0 as customers begin to expect features such as Visual Editing, he added.

Maritz's projections fall into the Cairo time frame, which Microsoft said will be available by the end of 1994.

Despite some concerns about OLE 2.0, attendees generally seemed convinced that Cairo is someplace they need to visit soon.

Victor Khatutsky, a software architect at Pilot Software, Inc. in Boston, said he considered the OLE 2.0 developer's kit to be more of a "Cairo SDK." He described OLE 2.0 as a "logical next step" for his firm's product, LightShip, and a way to connect to other applications in a richer way than is currently possible with OLE 1.0 or Dynamic Data Exchange.

That improved integration implemented by OLE 2.0 was seen as vital by other attendees as well. "OLE 2.0 is in our destiny," said Jack Ozzie, senior software engineer at Iris Associates, creators of Lotus Development Corp.'s Notes groupware package.

Not an easy road

Both Microsoft and independent developers said OLE 2.0 will require considerable effort. Microsoft recommended that developers dedicate at least one full-time programmer to learn about and implement OLE 2.0 and added that developers should begin to think of their applications in terms of a component architecture, which could be a major paradigm shift for some programmers. Most importantly, according to developers familiar with the process, OLE 2.0 allows for the development of applications one piece at a time. This means that should users decide to add more functionality later, developers' previous efforts will not be wasted.

Some developers have apparently mastered the art if applications at the conference from Shapeware, Chrisalan Designs, Inc., Wilson WindowWare and Traffic Software Ltd. are any indication.

Many were based on OLE Automation, a means of exposing the underlying features of an application to the control of other applications. By this method, a user could employ a macro language that could link two applications in such a way that they would look like a single application.

Intel's dominance could slow Alpha

CONTINUED FROM PAGE 1

PCs and other platforms. Moreover, Alpha must go up against Intel's Pentium chip. Systems with Pentium should start shipping next week (see story page 16), and DEC will unveil its Alpha PC on NT and tools.

Other users said they see both Alpha and Intel systems playing a role.

Industry analysts said DEC must do a better job of carving out its niche.

While some users praised Alpha as a "screamer" box, "DEC still has a big challenge ahead to make Alpha an attractive NT platform because Intel is so entrenched," said David Solomon, president of Solomon Software Technologies, Inc., a Nashua, N.H., consulting firm.

"Alpha has to be so much more attractive so that users and developers will take the extra step to move to it," Solomon said, adding that DEC ought to offer 486 pricing and get NT compiler vendors on board to gain a foothold.

Then there is the need to address the issue of general applications availability, as there are so far about 200 Win32 applications compiled for the Alpha system. Microsoft claimed that vendors have committed to producing a mix of more than 500 applications and tool kits for Windows NT, many of which are for the Intel architecture.

Banking on DEC

Among key banks now looking at NT on Alpha are The Chase Manhattan Bank NA, Chemical Bank and Bankers Trust Co. Because all three have significant DEC VAX installations, they are interested in client/server configurations with VAXs and Windows NT-based Alpha systems. But none are likely to move away quickly from the advantages of VMS backup and clustering until NT offers comparable capabilities, they said.

Chase Manhattan Bank has three sets of NT beta tests running now: on DEC's Alpha-based PC, on Compaq Computer Corp.'s Intel-based DeskPro and on NCR Corp.'s 3450 four-processor platform.

Banker's Trust, meanwhile, is testing Alpha servers running Windows NT for the company's PC local-area networks but is also checking out Intel. And Chemical Bank has made the decision to go all out for NT-based platforms and will this week showcase a dual Pentium NCR box running Windows NT at a technology forum for corporate executives.

Demos aside, Chase Manhattan Bank is trying to figure out how to fit Alpha into its shop. "Alpha's very fast, and now we have to see where to place it within our architecture," said Gene Friedman, a Chase Manhattan Bank vice president.

"The specs look good for Alpha, and we're very interested in checking it out, but if we had to decide today, we'd opt for Pentium since it's running our applications," said Rich Lansing, a vice president at Chemical Bank.

An application that took 15 minutes to run on a 50-MHz 486 took only five minutes on the Pentium box, he estimated. Alpha will have to better that performance and offer pricing that is "not onerous" to remain in contention.

"It's not a contest between the two; we'll leverage [both Intel and Alpha] where appropriate," said Sholom Bryski, a managing director at Bankers Trust.

Bankers Trust has brought several Alpha boxes in-house running on VMS and NT. "It looks very good, and on NT, we'd like to [start] by using it as a LAN server platform," said Stanley Rose, a vice president. "It offers speed to the applications that need it."

The attractiveness of Alpha currently lies in its performance — DEC will ship a 150-MHz system for end users and is capable of delivering a 200-MHz box, while Pentium is expected to offer a highest speed of 100 MHz [CW, May 3].

Chemical Bank will initially put in-house-developed customer service and maintenance applications onto Windows NT; the next step will be operations, risk management and business application support. Assuming these steps are completed, the bank would finally move beyond its initial pilot project to production applications in the 1994-95 time frame.

Chase Manhattan is even more conservative; it has not yet committed to NT.

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News Shorts

DEC All-In-1 upgraded

Digital Equipment Corp. announced new services, end-user options and entry-level pricing for the company's All-In-1 office automation software, as well as better integration with TeamLinks groupware products, DEC officials said last week. Additional services include migration assessment, upgrades, customization and personal assistant/teamroute start-up services.

Transarc sets channel

System software vendor **Transarc Corp.** last week announced a new distribution channel to provide "one-stop shopping" for the Open Software Foundation's Distributed Computing Environment and Transarc's own Encina products and services. With 120 customer installations of Encina today, Transarc officials said demand for a "vendor-neutral" channel prompted the company's move into the retail distributed computing marketplace.

FBI investigates stolen systems

Four companies in the San Francisco area have been searched and are being investigated for interstate transportation of stolen computers, according to a statement issued by the Federal Bureau of Investigation last week. The companies that have been searched are **Hi-Tech Computer Systems, Inc.** in Brentwood; **National Smelting and Refining Co.** in Santa Clara; **Peripheral Remarketing, Inc.** in Livermore; and **React Financial Services** in Atherton. Formal charges have not yet been filed, an FBI spokesman said.

AT&T sues MCI — again

AT&T and partner **Unitel** filed a patent infringement suit against competitor **MCI Communications Corp.** and its Canadian telecommunications partner, **Stentor**. The suit is an extension of the patent infringement litigation AT&T brought against MCI in the U.S. in January after two years of negotiation over 10 AT&T-patented technologies MCI uses in its virtual private network services and which it made available to Stentor when the two formed an alliance last May.

EDS to supply 7-Eleven ATMs

The roof may have collapsed on an **Electronic Data Systems Corp.** automated teller data machine (ATM) center last winter, but the sky did not exactly cave in on the business. The Dallas-based outsourcer last week won a 10-year deal to install and operate ATMs at **Southland Corp.** 7-Eleven convenience stores. EDS said the deal is worth approximately $100 million, based largely on anticipated transaction fees at as many as 4,000 machines it expects to install.

SHORT TAKES **Microsoft Corp.** said it has delivered Version 6.0 of its Word word processing package for DOS [CW, April 26]. . . . **WordPerfect Corp.** is expected to announce this week that on June 28 it will deliver Version 6.0 of WordPerfect for DOS, a 32-bit implementation. . . . **Unisys Corp.** introduced the LINC Development Assistant III, a computer-aided software engineering (CASE) product that links upper-CASE graphical analysis and design tools with lower-CASE development and testing systems. . . . Unisys has also started a service called CTOS/Open Forum on the **CompuServe Information Service**, which customers can access by typing "GO CTOS." . . . **Penril DataComm Networks, Inc.** acquired internetworking vendor **Datability, Inc.** . . . AT&T rolled out a nationwide network service discount plan allowing users to save 5% to 24% on local access charges in return for multiple-year contract commitments.

Microcomputing

It's almost show time for Pentium

By Michael Fitzgerald

Users will have every right to expect their first-generation Pentium hardware to be solid as a rock. After all, Intel Corp. began telling major hardware vendors about the chip's particulars almost two years ago.

Some privileged vendors, such as IBM PC Co., Dell Computer Corp., Compaq Computer Corp. and NCR Corp., will start shipping systems next Monday. Others such as Unisys Corp. must wait until early in the second half of the year for volume Pentium shipments.

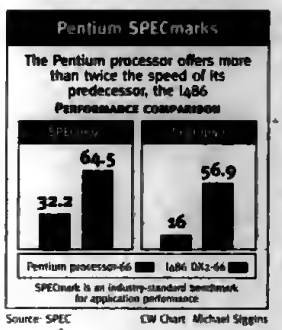
Users awaiting these systems last week said they expect to hit bumps in the road as they experiment with Pentium-based systems: Many new Pentium boxes will feature a complete architectural shift.

"We're looking for the next generation of PCs to leave behind a lot of the vestigial features of the 8088-based PC, such as the slow buses, the I/O structure and all the expansion issues that are such a nuisance," said James Hansel, vice president of investment systems at UBS Asset Management, Inc. in New York.

Hot seat

Dealing with Pentium's much-reported heat problems was another issue.

"If the chip gets too hot, it dies, and it can ruin the processor if it happens too many times," said Frank Greer, system development manager at NCR's workstation division in Clemson, S.C. Overheating can also bring early death to other parts of the system, such as the hard drive.



Source: SPEC CW Chart: Michael Siggins

Fan location may be key, Greer warned. While many vendors, including Compaq, have opted to build a small fan onto the heat sinks that help keep Pentium chips cool, Greer said, "We don't see these fans as reliable."

Compaq has an automatic fail utility built into its system software that will shut the system down if the chip begins to overheat.

Vendors may benefit from building upgradable systems. Because vendors close to Intel have had as much as two years to prepare for Pentium, many released servers and desktops last year that featured Pentium-capable motherboards. Typically, these systems came with a 64-bit processor bus and a 128-bit memory bus.

For instance, Compaq's DeskPro/M, released in September 1991, was designed with Pentium in mind. Because the DeskPro/M features removable subsystems, Compaq can simply design a new processor complex that accommodates Pentium and put it into a DeskPro/M with all Pentium-optimized subsystems.

Compaq did take one of the more radical Pentium design steps, modifying the Pentium-ready TriFlex architecture it uses in its servers for its Pentium-based DeskPro/Ms.

Users who bought systems that support an OverDrive upgrade to Pentium will be disappointed if they expect to pop in one of Intel's new 60-MHz or 66-MHz Pentiums, as Intel will not ship the OverDrive part until next year.

Another possible downer is that systems vendors not on Intel's most-favored list may not have built systems that will take full advantage of the write-back cache and pipelining features in Pentium.

Oracle, Compaq team

CONTINUED FROM PAGE 1

companies build their lock manager. A lock manager keeps one CPU from overwriting the work of another CPU in a clustered environment.

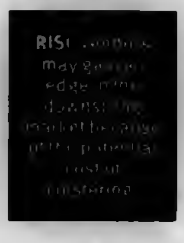
Not an easy task

Richard Finkelstein, president of Performance Computing, Inc., a database consultancy in Chicago, said the partners face an extremely complex endeavor. "This is a very, very complex environment to deploy, and I don't see how they're going to get all these systems together in a viable fashion for three to five years."

Finkelstein added, "If they could produce it, they could do good things for customers because clustering allows a lot of flexibility and growth for an organization."

The potential cost of a cluster had at least one user saying RISC vendors might gain an edge in the downsizing market over PC-based units.

Big Unix boxes "are coming down in price, while a PC cluster starts escalating costs to where it's going to be as high as a minicomputer," said George Roukas, director of systems at a major financial company. Noting that his applications are getting bigger, he said, "We're looking at going beyond the PC server world [to Unix]. Clustering is not going to change that."



Modifications a must

According to sources, Oracle and Compaq will have to modify the product to recognize both the multiple processors in an Extended Industry Standard Architecture-based system and some other performance enhancements to Compaq's network management software. The sources said Compaq will be Oracle's first partner in the PC server market.

Spokespeople at both companies neither confirmed nor denied that the two firms are working together.

Compaq and Oracle are said to be pursuing similiar partnerships with other companies as well. Oracle, for example, is known to be developing Parallel Oracle on platforms such as NCR Corp.'s 3550, a scalable, minicomputer-like server with similarities to Compaq's SystemPro/XL.

The strategy is driven both by Compaq's ongoing desire to beef up its total systems strategy as margins shrink on hardware and by Oracle's interest in getting business as PC LANs outgrow current hardware and software configurations.

Users will gain the ability to scale up their systems by either adding processors to a high-level SystemPro/XL or adding more SystemPros to the cluster.

Senior West Coast editor Jean S. Bozman contributed to this story.

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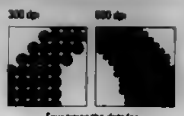

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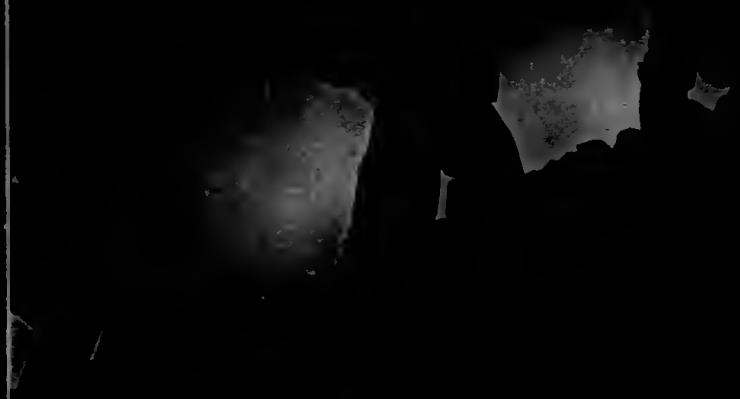

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Reporter's Notebook

Items of interest from last week's MacIS show in San Antonio.

Corporate customers developing a client/server architecture applauded last week as **Apple Computer, Inc.** finally delivered its full six-volume **Vital** (Virtually Integrated Technical Architecture Lifecycle) document. Vital is an internally developed design for integrating the Macintosh into a variety of mixed hardware and software configurations.

Curiously for a multimedia-oriented company, the $1,500, 1,000-page document is only available in luggable paper form, although Apple officials said they are considering both on-line and CD-ROM versions. Apple also announced fee-based Vital training will be available from **Bear River Associates, KPMG-ExIS, Martin Marietta Information Systems** and **RWD Technologies**.

Look for the second phase of Apple's extensive **customer support** package to be rolled out in September. This portion will be geared toward the corporate customer, and sources said it will include on-site support personnel, configuration management utilities, televised briefings for remote sites and an on-line support database.

Nagging **shortages** still remain for several Macintosh models. Users said it is still tough to get the Quadra 800 as well as the PowerBook 180, MacLC III, the MacIIVX and the Centris 610 and 650.

The next version of **AppleShare**, which is due out next month, will include a new way to crack down on software piracy. An AppleShare 4.0 protocol called License Manager will search networks for unauthorized copies of the server software. If it finds an unauthorized duplicate, it flashes a message to the network and users as they try to log on. The messages are intended to be an annoyance, but they will never shut down the server, sources said.

Look for an update to Apple's **Data Access Language** (DAL) early next year. DAL, which enables interactive data access to multiple database servers, supersedes the terminal emulation that had been the source of most Macintosh-to-host access in the past. Still desperately needed: decent connections to **Hewlett-Packard Co.**'s TurboImage database. Mike Foster, project manager at **DeLong Sportswear, Inc.** in Grinnell, Iowa, said: "It sometimes seems that HP and Apple ... are connected like two cans and a piece of string."

PowerBook owners are complaining that the screen on the popular portable computer is easily broken and that Apple is charging more than $1,000 — or half the price of some models — to fix it. Apple has apparently brushed off the problem, claiming the machines were "abused." Users disagreed and claim Apple has an engineering problem that it will not admit to.

Compiled by West Coast senior correspondent James Daly.

Number one's new number.

Mac issues

Top 10 issues for Microsoft to come out of the MacIS show

1. Improve feature and file cross-platform compatibility of Microsoft products.
4. Shortage of information on OCE/MAPI.
5. Make Microsoft upgrade costs more consistent.
7. Become more committed to Macintoshes.
8. Provide consistent support for Apple Events in all products.
10. Clarify Apple's relationship with Microsoft.

Source: MacIS

CW Chart Janell Genvoese

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Business process re-engineering

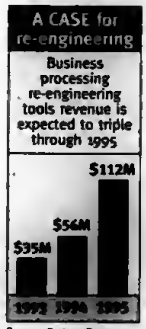
TI breaks ground with modeling tool

By Ellis Booker
PLANO, TEXAS

Already a leading supplier of computer-aided software engineering (CASE) applications, Texas Instruments, Inc. this week began shipping its first business processing modeling product.

Called Business Design Facility (BDF), the workstation-based system permits users to graphically model business procedures and organizational structures. Actual cost, quality and cycle time metrics can be defined by the user and input into the model from flowcharts.

Users can construct "as is" models and then explore alternative ones. For instance, a company might analyze all the steps used in performing customer credit checks, looking for ways to reduce the time from five to three hours.



Source: Gartner Group

According to analysts, TI, which announced BDF last September, is one of the first companies to offer such a tool.

"Of the CASE vendors, they are clearly the first with a product separate from CASE," said Al Case, vice president of application development and management strategies at Gartner Group, Inc., a consultancy based in Stamford, Conn.

Family line

BDF is based on a yet-to-be-released "metamodel" of the Information Engineering Facility (IEF), TI's popular CASE tool. Introduced in 1987, IEF is a software engineering tool currently used by nearly 700 organizations, according to TI.

CASE tools such as IEF typically work in phases, from initial planning and analysis to design and construction of the computer code.

BDF models, which represent reformulated business arrangements, feed the early stages of this CASE work. If CASE tools automate the creation of new applications code, tools like BDF help question and visualize underlying business procedures.

TI's BDF supports Microsoft's Windows 3.1 or above and IBM's OS/2 Version 2.0 or above. It also supports the DDE feature in Windows 3.1 and OS/2 for linkage with other DDE compliant applications.

BDF supports an "automatic" interface to IEF but maintains its own local encyclopedia for data and models that allows uploading of models into the tool.

Version 2.0, expected at the end of this year or in the first quarter of 1994, will be able to tie directly into IEF's central or local-area network-based encyclopedia.

TI is also intent on making BDF an open utility that is attractive to users of other CASE tools. Version 2.0 will support a number of interface standards, including the CASE Data Interchange Format, enabling it to work with CASE tools from other vendors, noted Carol Maring, TI's worldwide BDF manager.

At the workstation level, BDF can already operate with other software tools because it supports Microsoft Corp.'s Dynamic Data Exchange (DDE) feature.

TI indicated it has already developed macros between BDF and Microsoft's Excel and Word, two DDE-compliant applications. The macros are being provided as "exampleware," TI said.

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Technology in Tinseltown

In its quest for special effects, Hollywood becomes a computing pioneer, testbed

By James Daly

The plot used to go like this: State-of-the-art hardware and software were shipped off only to national laboratories or a handful of leading-edge firms. But today, with federal research dollars shrinking and private companies looking twice at million-dollar information systems budgets, some of the most powerful hardware and sophisticated software in the world goes to high-rolling Hollywood film producers.

Not only is the film industry eagerly buying the computer industry's superstar systems, but it is also working hard at expanding technological frontiers in areas such as visualization and high-speed graphics. One of the tangential benefits for users outside Hollywood is that the film industry is now a testing ground for tomorrow's commercial technologies.

Feeding the monster

These days, the movie industry needs as much computational power as it can muster in order to feed that voracious monster known as special effects. Through visually stunning blockbusters such as *Ghostbusters*, *Batman* and *Terminator 2*, Hollywood has created a demand it can barely satiate in the public's increased desire for more spectacular and complex video and film effects.

Even the speediest computers bog down like lawn mowers in wet grass when processing color film — a single 35mm frame carries up to 20M bytes of information before data compression. At 24 frames per second, a single special scene lasting less than a minute could take four months or more to create.

IBM's eight-processor, $1.2 million Power Visualization System helped Sylvester Stallone conquer the elements in an upcoming movie

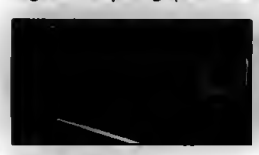
The result is that IBM's Power Visualization System (PVS), a new breed of supercomputer originally designed for such computationally demanding scientific visualization projects as monitoring ozone data, has been installed at Boss Film Studios in Marina Del Rey, Calif., one of the leading lights of the special effects business. "We'll eat up all the power we can get and still demand more," said Alan Fetzer, chief operating officer at Boss.

Despite the $1.2 million price of the eight-processor PVS, it is a godsend to Boss founder and four-time Oscar winner Richard Edlund when he is trying to reify the spectacular imagination of film directors like John Landis or Tim Burton.

SPECIAL EFFECTS

In *Death Becomes Her*, special effects created this head-turning illusion:

Final composite of Meryl Streep sitting at piano with head twisted 180 degrees. Computer graphics reflection of head in mirror.



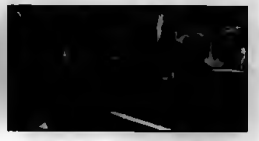
1. Background plate.

2. Clean plate used to fill in background behind blue hooded head.

3. Bluescreen head match-moved to live action plate.

4. Bluescreen ponytail in head element.

5. Computer-generated replacement neck.



6. Precomposite; head removed and replaced with clean plate.

Source: Industrial Light and Magic

Boss' PVS is linked to a 21G-byte IBM Disk Array Subsystem that delivers sustained data transfer rates of 55M byte/sec. Special effects artists can quickly blend fantastic images on the computer screen and play them back in real time, replacing a laborious photochemical process that Edlund calls "our old sledgehammer technology."

For *Cliffhanger*, the Sylvester Stallone thriller due out later this month, Boss used a battery of Silicon Graphics, Inc. workstations linked to a PVS doing 2.5 billion floating-point operations per second. The result is a heart-stopping Rocky Mountain sequence for which special effects artists nimbly designed a scene in which Stallone scales a towering jagged cliff while battling blowing snow and attacking helicopters. Conventional image compositing would have taken weeks.

Silicon Graphics recently announced a partnership with Industrial Light and Magic (ILM), the San Rafael, Calif.-based special effects company founded by *Star Wars* director George Lucas. The pair will create a state-of-the-art research laboratory to explore new imaging technologies and evolve special effects from "a photographic process into a more painterly process," Lucas said. The venture has been fortuitously named JEDI, for Joint Environment for Digital imaging.

Special effects artists can quickly blend fantastic images on computer screen and play them back in real time replacing a laborious photochemical process

JEDI will include 70 Silicon Graphics workstations and a high-speed network that will allow it to communicate with ILM clients all over the world.

The network is currently being used in the creation of *Jurassic Park*, now in production for a scheduled June release. Several times a week, ILM-created special effects are sent over the wire to director Steven Spielberg in Poland, where he is working on a new movie.

Not just creepy crawlers

The products generated by the alliance will not be limited to large lizards chasing actress Laura Dern around the jungle. Although the ostensible goal of JEDI is to cut the cost of movie special effects to one-tenth their current rate, the system's output is expected to extend far beyond big-budget Hollywood epics.

Sophisticated modeling applications and texture mapping techniques that were designed by the Silicon Graphics/ILM partnership several years back are now used at places such as Ford Motor Co. in the design of new cars.

In addition, the ILM and Silicon Graphics international digital network could be a precursor of things to come — getting high-quality images instantaneously anywhere in the world is something the leading imaging companies have been trying to perfect for years. "This is just the beginning of the revolution that's being visited on us by digital technology," Lucas said.

David W. Bromley, news editor at the IDG News Service, contributed to this report.

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that adapts to multiple environments.

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HEWLETT PACKARD

Not dead yet

When I hear people say mainframe computing is dead, I think of the experts who forecasted $3-a-gallon gasoline by 1982, or the doomsayers who predicted the world would end on Oct. 19, 1990.

Such predictions make for great press, but they're out of touch with reality.

Mainframe computing — as we have known it — may be on the decline, but don't forecast its demise too early. What's happening is that the economics of mainframe computing are changing. Hardware prices are plummeting, software costs are falling into line with hardware, and mainframe architectures are evolving into more cost-effective parallel models.

At DB/Expo '93 in San Francisco last week, one speaker asked the crowd of about 150 — mostly corporate developers — how many of them had a mainframe in their organization. About 70% of the attendants' hands went up. The speaker then asked how many expected to have a mainframe in their organization five years from now. I'd say at least 70% of the hands shot up. Maybe more.

The next day I had the opportunity to ask Microsoft's Bill Gates about the future of centralized computing. His answer? "We're in the information age and that means there'll be a lot of information. There are still large economies of scale in storage costs and administration of centralizing that data, and as fiber brings communication costs down, you'll be able to pool a lot of that data in one place. . . . The productivity application world and the data center world are not separate any more."

Is Gates a mainframe bigot? Hardly. But Microsoft's chairman knows that information at your fingertips doesn't necessarily mean information spread to the four winds. Gates the PC bigot understands that securing and indexing information is easier to do in one place than across a thousand servers spread throughout the enterprise and linked by a single cable.

A few weeks ago, I spoke to a user at a large insurance company who told me that when his firm's $11 million mainframe comes off lease late next year, its residual value will be about $500,000. At that price, he expects his company to hold on to the mainframe because it will be so cheap to operate. And this user isn't exactly a big iron booster. His company has been on the leading edge of client/server development.

No, the mainframe isn't dead. What's dead is high-priced, proprietary hardware from vendors whose primary competitive edge is in the headlock they have on captive customers. Good riddance. There is a lot of innovation still left to come in the data center. It will be in multiprocessing servers running Unix or Microsoft Windows NT with massive RAID subsystems.

It will come from companies like NCR, Sequent and Tricord and, yes, even IBM and DEC. But centralized computing isn't going away. If you think it is, I have some $3-a-gallon gasoline I'd like to sell you.

Paul Gillin, *Executive editor*

Free speech includes E-mail

I strongly disagree with Paul Gillin's premise that electronic mail transmitted via a quasi-public forum be held to the same legal standards as commercially published journalism ["Flame out," CW, April 12].

Messages between private parties representing themselves should have free-speech protection, regardless of the media in use. The issue isn't the size of the audience involved; it's the ground rules of the forum.

The understanding within the electronic community is that, unless explicitly stated otherwise, bulletin board service E-mail messages represent the opinion of the individual alone and have no official credence. To penalize me for using technological advances to express my opinion is unfair and throttles the adoption of the medium.

I have to wonder if the root of your objection is a vested interest in commercial journalism and communications — industries and premises threatened by the adoption of mass, private publishing.

Channels such as CompuServe and Prodigy empower individuals with the means to directly address the news events and makers and then discuss the issues within an ever-widening circle of contacts. As a result, intermediaries such as newspapers and magazines are facing a diminishing role. Perhaps your stance is rooted in self-preservation.

R.N. Carr
Project analyst
Fort Worth, Texas

Time for TeamFocus

This letter is in response to "What IBM needs is a little TeamFocus" [CW, April 5]. I couldn't agree more with Esther Dyson's views of TeamFocus.

As an employee of IBM and a facilitator who uses TeamFocus, I have seen the productivity gained in both IBM and client meetings that have used TeamFocus to do problem-solving and strategy sessions.

I would be happy to run TeamFocus meetings for Mr. Gerstner and his staff. Unfortunately, I will need to do this as a contractor because, after 12 years of service, IBM has decided my skills aren't needed at the company.

Howard S. Miller
San Francisco

AI deserves more credit

You've done it again — buried artificial intelligence prematurely ["Ghost image," CW, April 5].

There is no question that AI hasn't lived up to the "taking-over-the-world" promises that some vendors and media pushed, but AI is alive and well, working productively and expanding its influence.

The Innovative Applications of Artificial Intelligence '93 winners to be presented July 12-14 in Washington, D.C., represent impressive performance for AI technology in a wide variety of basic business functions.

I think you can provide a meaningful service to your readers by taking a current look at AI. AI expert Ed Feigenbaum is delivering a talk at the American Association for Artificial Intelligence national conference in July. He says, "It is important to our economy to free this competitive tiger, but to do so we must understand its cage."

Part of that cage is the *Computerworld* attitude toward AI, mostly in headlines that are hurtful, not in articles, which have done a respectable job of giving AI credit where due.

Jim Wattenmaker
Cleveland

Memory failure?

Charles Darnell must have misread the logo on the computer in question [WYSIWYG, CW, April 19].

The first installations of the Univac 1107 were at the Census Bureau in Suitland, Md., in 1962. The 1107 was air-cooled and did not have any internal facilities for lunch-eating or chess-playing. I suspect the device in question was an earlier Univac, possibly an 1103A or 1105.

Wayne P. Fuhrmann
Bowie, Md.

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Client/server isn't the answer for everything

Ed Toben

This is no time for easy answers, but sometimes I feel as if that is what IS managers are getting from those we depend on for support.

Our job is to provide information systems that support the objectives of our customers — the business "users," in order to do that job properly, we, in turn, rely on an external community of vendors, consultants, educational services, conference forums and so on. Lately, however, I've been concerned that this support group isn't fully listening, that technical solutions are being recommended and marketed to us without complete consideration of the needs of our customers.

It is popular in the business press to declare, "The mainframe is dead." At the same time, many IS consultants remind me of Johnny Carson's Karnac the Magnificent. "And the answer is ... client/server!" The difference is that, in this routine, neither Ed McMahon nor anyone else is asking any questions.

Specifically, three questions need to be asked: What information is needed, who needs it, and when? Until these questions are answered, no architecture can be determined.

At Colgate-Palmolive, we have put considerable effort into determining what information our business users need. Although the requirements are difficult to simplify, in general they are to support customer service. Our retail

customers have clearly indicated their objectives; to lower inventories, streamline the replenishment process and cut costs.

For us, the answer to "What information is needed?" is "The information to move product from a retail point of sale through all the sales, manufacturing, distribution and financial phases leading to the next sale."

The answer to "Who needs the information?" has changed from the traditional exclusive use by a particular department to shared use by cross-functional teams. "When?" is increasingly a matter of real time.

It is also important to understand how the information is used. As a simple example, the basic information on a purchase order is used by many functions throughout the organization, but each uses it differently.

People in distribution and customer service functions need precise, timely information in an actionable format. Sales and marketing personnel need the same facts integrated with other information for analysis. And while those two departments can use the same basic information, they analyze it differently. This multiplication of requirements continues exponentially throughout the organization.

The organization's information architecture needs to provide for all of those varieties of need. The mainframe's strength is the large, efficient processing of information. PCs and workstations provide analysis capabilities on the desktop. The network and systems software must be able to move the information where it is needed, when it is needed.

These are complex issues that cannot be simplified in catch phrases such as "client/server." Instead, all of us — IS, vendors, consultants — must listen to the same speaker: the business user.

Toben is director of information systems at Colgate-Palmolive Co. in New York.

Unsupported technology: A prescription for failure

COUNTER-INFORMATION *by* Michael Schrage

Of all the passions that fuel technically brilliant IS management, none burns hotter or more pure than its utter contempt for end-user training and support.

CIOs may preach the gospel of client/service architectures and the productivity promises of groupware, but ask them about the end-user training and the support infrastructures they're building to manage it all and they'll look at you as if you had kneed them in the groin.

A thoroughly unscientific, informal survey of my Fortune 1,000 MBA acquaintances reveals that while they said their companies all offered training and support, *not one* of them knew whether their company offered a FAQs bulletin board. (For non-Internet users, FAQs stands for Frequently Asked Questions — in other words, a bulletin board that lists the answers to end users' most commonly asked questions.)

Why not? Why not create and publicize something that can make everybody's working life just a little bit easier?

In too many respects, IS organizations have come to resemble the dehumanizing aspects of urban hospitals. They are capital-intensive, high-technology operations filled with technically competent professionals working against the clock and against the odds. But their bedside manner is nothing short of atrocious. Sure, there's the rare specialist or support person who takes the time and effort to discuss and explain. But essentially, the patient/end user is viewed as a problem to be solved rather than as a person.

> IS organizations have come to resemble urban hospitals — capital-intensive, high-technology operations with atrocious bedside manners.

The more enlightened hospitals understand that, no matter how busy things get, informing and supporting patients can be just as important as treating them. No doubt, some of this is done to mitigate the risk of malpractice suits, but there's also a growing recognition that these sorts of practices make for happier and healthier patients. IS departments had better become similarly enlightened.

IS is spending a growing fortune on end-user training and support budgets. Indeed, that may be part of the problem. The idea that IS is in the best position to pay for and run training programs is absurd. If end-user computing is an enterprisewide investment, then training has to become enterprisewide investment — and that should be reflected in the budget, not just in who gets sent to training. Why shouldn't human resources and marketing have to kick in for training and support?

If I were a CIO or IS director, the end-user trend that would worry me the most is disintermediation of support — the IS group being bypassed as end users increasingly rely on vendors for support.

On the surface, this seems to be merely another example of outsourcing. Dig deeper, however, and what you find is that, bit by bit (pun intended), IS begins to lose any core competence it has in understanding the organization's technology culture and use.

Forget the la-di-dah frothings about customer service; bringing creativity to the challenge of end-user training and support is turning into an issue of survival. In this day and age, a hospital can have great doctors and terrific equipment but still not be assured of either profitability or continued existence. The same holds true for IS.

Schrage consults and writes about how technology reshapes the way people interact. He is a visiting scholar at the MIT Sloan School and the Laboratory for Computer Science and author of a book on collaborative technologies, *Shared Minds* (Random House, 1990). His Internet address is schrage@media-lab.media.mit.edu.

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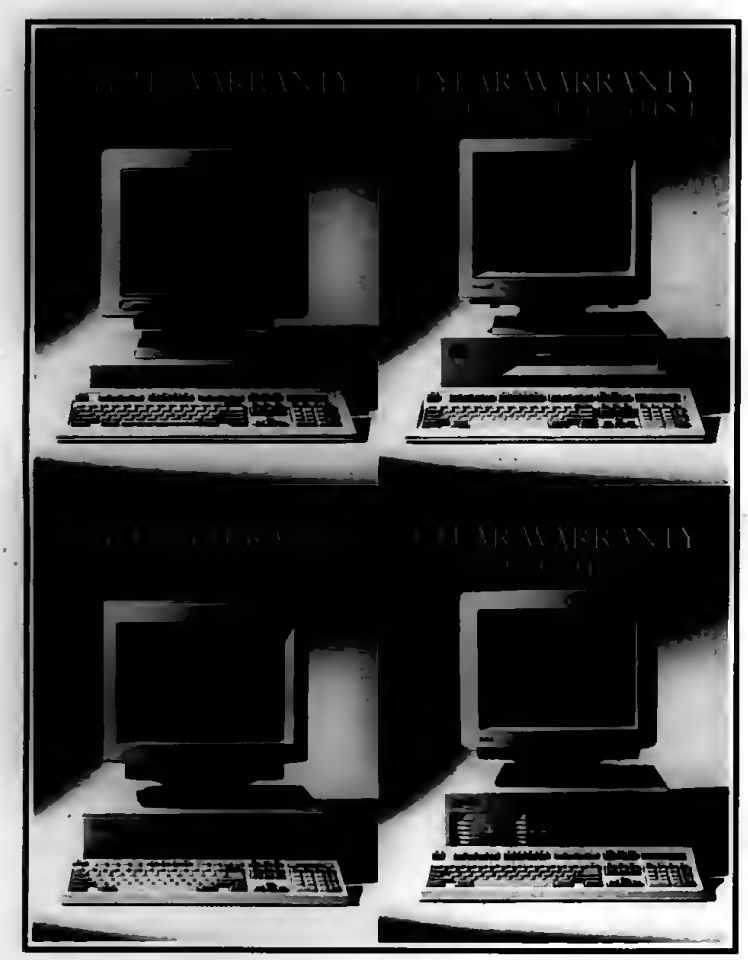

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Charles Babcock

Teamwork in action

The latest flowering of what Novell President Ray Noorda likes to call "coopetition" is a pact that has one of the features of the competing Banyan Vines being sold as an add-on to NetWare. Banyan is making its StreetTalk global directory available under the name Enterprise Network Services for NetWare.

Such a move required technical collaboration, and Banyan officials praised the engineering relationship the two firms enjoy at the Banyan user group meeting in San Francisco recently.

Lest anyone think they are getting too cozy, the Banyan spokesmen didn't miss a beat as they switched to bashing NetWare 4.0's Directory Services. Banyan has 8% of the LAN market compared with Novell's 70% or more, so it seems "coopetition" retains its competitive edge, especially for the smaller party.

Novell networks have been restricted by their hinderies and other single-server characteristics. The latest version of NetWare, 4.0, overstepped those restrictions, but it is a more complicated installation than its 3.X and 2.X predecessors. In addition, 4.0's NetWare Directory Services don't work with servers running NetWare 3.X or 2.X. So creating a global directory with 4.0 requires either upgrading all existing NetWare LANs to 4.0 or turning to Banyan's alternative.

A key challenge for any enterprise LAN is keeping the global directory updated for all locations. As the network grows to hundreds or thousands of users, the large amount of information about each user and resource becomes unwieldy to send around the network. So far, Novell and Banyan have come up with different answers, with Banyan's showing its edge in experience.

NetWare 4.0 creates a global directory on the X.500 model that can produce a network address with as many elements to the name as needed. The directory, or some fraction of it, is then transmitted to each network server with accompanying descriptors. Because of the amount of information, the task of keeping directories current escalates as the network grows, and it's not clear how close to simultaneously NetWare 4.0 executes the updates.

Banyan has taken what Stan Schatt, senior analyst for LANs at Computer Intelligence/Infocorp, describes as a more "elegant" approach. Instead of trying to disseminate all the information connected with each name immediately, Banyan uses a central server for the global directory and propagates a table with essential locator information to each server. Thus, if a new user comes on the network, a distant co-worker can communicate with him within seconds using a standard, three-part address — i.e., user name, department and business unit.

Within 24 hours, StreetTalk sends out all the descriptor information that goes with a name, permitting someone to search for an individual based on items such as the name of the person to whom he reports. Banyan's approach lends itself to synchronizing a network quickly without overloading the update task.

Given Banyan's greater experience at designing large networks, one might wonder why Novell has left the door open to its huge 2.X and 3.X NetWare customer base. Schatt says Banyan can provide a service to NetWare 2.X and 3.X customers that Novell may not wish to provide, while it shifts its attention to developing NetWare 4.0. It seems to me, however, that the NetWare customers who try StreetTalk on their 2.X and 3.X networks will also want to compare it to the Directory Services in 4.0.

By the time this happens, Directory Services may be able to match or better what StreetTalk can do. If not, the competitive edge in "coopetition" will come back to haunt Novell.

Babcock is *Computerworld's* technical editor. His MCI Mail address is 575-2737.

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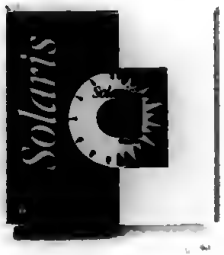

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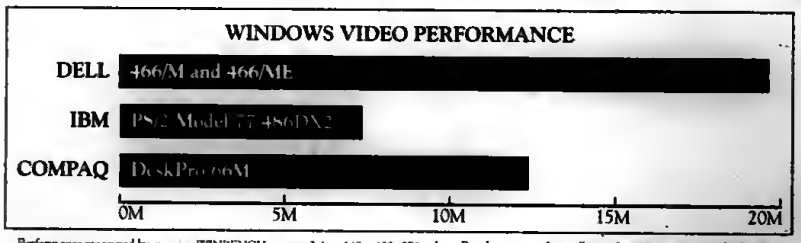

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IBM fills in OS/2 cracks

Enhancements and open systems thrust are potential lures

By Christopher Lindquist

Early reports from users on OS/2 2.1 indicate that the updated operating system has few blemishes but could use some additions to make it more appealing to customers. But the changes to OS/2 are only part of what is going on within IBM to help lift OS/2 from its also-ran status.

IBM has charted a course to open systems and cutting-edge technology that, when mixed with new marketing and sales strategies, will result in customer buy-in and a profitable business, the company hopes.

One of the approaches IBM is taking is an attempt to become known as an open systems vendor. "We want to be on the leading edge of open standards," said Scott Handy, program manager in market strategies for the Personal Software Products Group at IBM.

Among those standards will be full Distributed Computing Environment support and compliance with the Object Management Group's CORBA, or Common Object Request Broker Architecture, and a move to the Distributed Management Environment. (IBM is always eager to point out that Microsoft Corp.'s Windows NT will not support the former standard fully or the latter at all under current plans.)

Sound support

IBM has also enhanced OS/2 2.1 considerably in the Windows support area. The latest OS/2 can now run Windows 3.1 applications in seamless and full-screen modes at speeds rivaling, but not quite matching, Windows on DOS, according to customers using the OS/2 2.1 beta-test version. "Emulating Windows is our ante to get into the game," Handy said.

IBM will also be doing things to make money with the Personal Systems Products Group, including selling advertising space on development kit CD-ROMs and licensing technologies, such as those from the Distributed System Object Model, the IBM Microkernel and Taligent, to third-party vendors.

The company recently said some plans have changed concerning Taligent technology and OS/2. Handy noted that some customers felt they were getting mixed messages when the IBM representatives would come in and tout the microkernel for 1994, which would then be followed by Taligent people saying how wonderful Taligent would be in 1995 — with no apparent bridge between the two.

Now IBM says it is building that bridge by taking Taligent object

IBM, *page 39*

Better than ever

OS/2 2.1 will include many enhancements. The following are some examples:

- Dozens more printer drivers (more than 260 in all), including a Hewlett-Packard Co. Deskjet 500 driver that was lacking from OS/2 2.0. Adobe Systems, Inc. PostScript printer drivers will also be included.
- An "Enhanced Compatibility Mode" that will support Windows 3.1 Enhanced Mode applications.
- Increased driver support for CD-ROM drives, high-resolution video systems, including seamless Extended Graphics Array and Super VGA, and multimedia peripherals such as sound boards.
- Sounds can now be assigned to system events.
- Enhancements for portable PCs, including Personal Computer Memory Card International Association Version 2.0 support, large pointers for LCD screens and Advanced Power Management Version 1.0.
- Support for multiple AUTOEXEC configurations for DOS and Windows applications.

David Coursey

Software shark

Consider for a moment Bill Gates and the great white shark, then what they have in common and what this means to us.

For millions of years, great white sharks have roamed the seven seas, gobbling seals, growing old and enjoying their place at the top of the food chain. There have never been too many great whites — the environment wouldn't support and didn't require large numbers of such a ferocious predator. Better still, most folks didn't know about great whites, except in some abstract concept.

That, however, was before the motion picture *Jaws* created what we'll call the Great White (Shark) Myth. It's tempting to call it the Great White Lie, but it's been anything but innocent. It makes you wonder sometimes if the same thing ever happens in business.

Thanks to the image created by the movie — that of a blood-lusting fish with demonic intent — a significant portion of the great white shark population has been killed by "sport" fishermen. No one ever seemed to ask the question:

Coursey, *page 41*

DEC continues to gain in desktop market

By Melinda-Carol Ballou

Digital Equipment Corp. is continuing its march into the PC arena. While DEC was not even a blip on the market share screen a year ago, it now matches Hewlett-Packard Co. with 2% of the PC market (excluding home sales), according to the most recent figures from Computer Intelligence, a market research firm in La Jolla, Calif.

Bolstering DEC's position are persistent small and large wins, such as a deal closed earlier this spring with The Goodyear Tire & Rubber Co. in Akron, Ohio, worth up to $27 million. But DEC must follow up these initial gains to continue to make headway against the efforts of principal market leaders such as Compaq Computer Corp.

"DEC's direct-response business propelled them into the limelight, but the other companies are not standing still," said Computer Intelligence analyst Dan Ness. "DEC is now in the Top 10, and their seriousness [about the PC market] is paying off. But they still have a very small piece of the pie and a lot of work to do."

DEC's success is because of "a strong PC offering underneath the company's service and support umbrella, with which a lot of [DEC] clients are familiar and respond favorably to," said Randy Gnisto, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H.

Some current PC customers said worldwide support and service were driving motivations for them in choosing DEC's PC line.

Perkin Elmer Corp. in Norwalk, Conn., chose DEC's PCs over IBM's and Epson America, Inc.'s as an early implementor four years ago.

"They were willing to work with us on a global basis," said Sabine Slavin, director of customer sales and support at Perkin Elmer. Perkin Elmer requires PCs for controller operation of the manufacturer's line of analytical instruments. DEC worked with Perkin Elmer to provide similar products and pricing for the company around the world, which the other vendors were unwilling to do, Slavin said.

Preference for PCs

Other sites contacted by *Computerworld* that previously had DEC equipment and opted for the DEC PCs included Hoffman-La Roche, Inc., a Nutley, N.J.-based pharmaceutical company, Basic American Foods, Inc. in Vacaville, Calif., and Ohio University.

Gary Gladstone, a senior programmer/analyst at Hoffman-La Roche, brought in 17 PCs several months ago to replace obsolete 286s, 386s and IBM Personal System/2s. "We had a lot of DEC equipment on the VAX side, so I said, 'Let's look at the DEC PCs,' and it all worked as advertised," he said.

Pathworks and Novell, Inc. NetWare certification of DEC's PCs was a plus for Ohio University's Tu Fuh Chiam, technology and resources manager for MIS at the college of business administration, who is bringing in 30 DEC PCs. DEC will also provide common maintenance and support for the university's configuration of IBM, DEC and Gateway 2000, Inc. PCs.

Common maintenance services and Pathworks support were also factors for Basic American Foods' Gary Hensley, manager of information support. Hensley brought in about 50 DEC PCs in a configuration of 400 platforms.

Limited availability and comparative pricing, however, caused Hensley recently to opt either for Compaq or DEC PCs, as both firms have struggled with a lack of available systems. Hensley is purchasing not only DEC PCs but networking solutions as well and is looking to Alpha AXP-based servers on Open VMS when full clustering support is available.

$

DEC PC sales outside of its installed base have increased from less than 10% of the total a year ago to nearly half currently, according to Computer Intelligence. In the U.S. payroll sector, DEC tied for seventh place in PC sales with 2% of the market, Computer Intelligence said.

Virus hunters look to Mac operating system

By James Daly

With a little help from Appte Computer, Inc. engineers, viruses on the Macintosh could become a thing of the past, according to some computer security experts. But don't count on it any time soon.

Apple officials said they have considered providing virus protectioo via a software extension or eveo by writing it into tbe next iteratioo of the Macintosh operating system, in much the same way as Microsoft Corp. added an antivirus feature into its recently released DOS 6.0. "But that's not real high on our priority list," said David Pakman, product manager for system software at Apple.

David Stang, director of research at the International Computer Security Association in Washington, D.C., said Apple is missing a golden opportunity.

"There are only 40 or 50 Macintosh viruses out there, compared to 2,000 or more on the PC platform. With a little legwork, Apple eogineers could all but obliterate Mac viruses by the time we see System 8," he said.

Stang said applications, and especially system files, change over time. After a while, they may contain resources or code that the virus cannot ideotify or does not know how to handle.

For instance, a virus may try to hide a resource with a certain identifier within a file only to find that a new versioo of the file already has a resource with that identifier. The virus would theo be unable to infect the file.

A handy extra

Users said they would appreciate the extra fire wall sueb an additioo could provide. "It would be nice to have the added safeguard," said James Yip, manager of technical services at Ernst & Young in Toronto. "After all the talks we've given about the danger of viruses, the point still doesn't get through to some people that they have to scan their disks."

Alistair Jacques, director of support and development at Northwest Airlines in Minneapolis, said: "Yoo can never have too much protection when it comes to viruses."

One issue delaying Apple's antivirus efforts is that its engineers are already overtaxed. Many are currently involved io the final stages of fine-tuning the upcoming Open Collaboration Environment, a system software extension due this summer that promises to foster growth in the Macintosh collaborative computing market.

"Architecturally, there are a lot more important things Apple needs to worry about than viruses, which are already provided for through a number of third-party antivirus apptieations," said Pieter Hartsook, editor of "The Hartsook Letter," a Macintosh-specific newsletter in Alameda, Calif.

Macintosh fans also said that if Apple were to implemeot antivirus measures, it could not scrimp. Microsoft's implementatioo of Central Point Software, ine.'s antivirus product has come under heavy fire from users who said it does not recognize or eliminate enough viruses.

"t doo't want to see Apple doing it just for the sake of doing it," said Craig Danuloff, author of *The System 7 Book*. "Persooally, I'd rather see them get their foots down before I see them go after viruses."

Even if such a virus defense were initiated, there is oo guarantee it would crush all Maciotosh viruses. A new code may also make a virus change directioo rather than eliminate it.

An example of this is the Scores virus. Macintosh systems starting with Versioo 6.0.4 have included a resource with the same identifier as a resource that Scores tries to install. The result is a damaged System file that will oo longer operate properly and must be replaced bot that is not infectious.

Similarly, the WDEF virus will cause Macintosh models from the Macintosh IIFX and later to crash because of assumptioos it makes about the internal architectures.

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Utility smooths Windows path

By Michael Fitzgerald
SAN RAFAEL, CALIF

Anyone annoyed by the process of getting in and out of Microsoft Corp.'s Windows environment will appreciate a new utility from Binar Graphics, Inc.

Fantastic Recall, one of two new utilities from Binar, gives users a way to automatically get in and out of multiple applications without having to wait on Windows. A user can click on the Fantastic Recall icon, tell it to exit, and all applications will be saved. When the system is next turned on, a simple click will return the screen to the place it was before. Binar's other new product, AnyView, offers the ability to control their display by adjusting the resolution, gaining bird's-eye view features to highlight pieces of a program and improving display calibration.

"I'm excited about these products from a productivity perspective," said Carter Lusher, program director at Gartner Group, Inc. in Stamford, Conn. Lusher said users in the DOS world might have two applications up at a time, while Windows users can have up to seven.

"Saving data and opening and shutting files will be a productivity-draining exercise, and while Fantastic Recall might save only five minutes a day, an organization with 2,000 PCs can save 10,000 minutes a day," Lusher said.

Bill Lodge, project leader at The Turner Corp. in New York, agreed. "[Fantastic Recall] may change the way people use their Windows interface."

Both products are slated to ship June 1. Introductory prices are $49.95 for Fantastic Recall and $69.95 for AnyView. Prices will increase by $30 after 90 days.

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IBM fills cracks

CONTINUED FROM PAGE 37

technology and building it into OS/2 as quickly as possible, thereby giving OS/2 developers a head start on Taligent applications.

Handy noted that the first set of Object Frameworks from Taligent should be in beta-testing on OS/2 this July.

IBM apparently does not believe it can simply jump into the middle of the PC operating system fray and remain viable. Instead, Handy said, the goal is to find a paradigm shift in the industry and be on the front edge of it.

Multimedia help

While one part of that edge IBM is seeking includes object technology, another is the integration of advanced multimedia technology into the operating system. IBM has increased support for CD-ROM drives and sound boards and will include multimedia applets, such as video and sound players, with OS/2 2.1.

The video player includes support for something IBM calls "Ultimotion Video," a software-only compression standard that allows for full-motion video without requiring specific hardware. IBM said the player also supports multiple coder/decoders, which will allow it to work with different standards in the future, such as Microsoft's Video for Windows.

But IBM said it also realizes that it will be applications' support or lack of support for the new features in OS/2 that will make or break the operating system. To that end, IBM is enhancing its support programs to developers.

Both a developer's kit and a device-driver developers kit on CD-ROM will be available four times per year through a subscription service. The kits will include development tools, sample code, a newsletter, catalogs and advertising for third-party OS/2 development products.

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13. Treasurer, Controller, Financial Officer

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Price cuts

Toshiba and Zenith Data Systems cut prices across most of their product lines, and Toshiba added two notebooks with 200M-byte hard drives

[illegible]	[illegible]	[illegible]
T1850/80	$1,500 to $1,650	$1,300 to $1,400
T1850/120	$1,700 to $1,900	$1,500 to $1,600
T1850C/80	$2,150 to $2,400	$1,800 to $1,500
T1850C/120	$2,350 to $2,600	$2,000 to $2,100

[illegible]	[illegible]	[illegible]
T4400SX/120	$2,799	$2,599
T4400C/200	$4,799	$4,599
T4500/80	$2,799	$2,449
T4500/120	$2,999	$2,599
T4500/200	NA	$2,899
T4500C/120	$4,399	$3,799
T4500C/200	NA	$4,099
T6400DX2/200	$4,899	$4,199
T6400DX2C/200	$7,499	$6,499
T6400MM/200	$9,599	$7,999

Zenith Data Systems*	[illegible]	[illegible]
Z-Sport 325S Model 60	$1,299	$999
Z-Note 320L Model 60	$1,699	$1,499
Z-Station 433DH Model 200	$2,150	$1,900
Z-Station 425SEH Model 200	$2,150	$2,049
Z-4335 Model 170	$1,150	$1,100
ZCM-1495 (monitor)	$629	$499

*Only a sampling of Zenith's price cuts NA: not applicable

Coursey

CONTINUED FROM PAGE 37

Is this shark really a threat to me or good to eat? No? Then why don't I leave it alone? Myth overrides common sense and, left unchecked, may ensure we soon have no great white sharks at all.

Continuing our tale of environmental havoc, let's move on to Bill Gates, who — as far as anyone can tell — has never gulped down a seal. Yet to read the business and trade press, Gates is "the most hated man in the PC industry" and the top predator in the software industry's food chain. Is this really something to say about a man just before his wedding?

Certainly Gates' Microsoft is the most successful PC software company. And the company has achieved much of its success at the expense of other companies, generally through fierce competition. Microsoft has often been accused of unfair practices — though nothing as serious as *Jaws*' depiction of a shark going after a boatload of people.

Yet for all the talk, the accusations I've heard against a large chip manufacturer are much more convincing than anything I've ever heard about Microsoft. If there is *New York Times*-grade evidence against Gates, no one has presented it in public.

Likely scapegoat

More often, what you hear are people griping about Microsoft as an excuse for having screwed up on their own, without Bill's help.

But make no mistake: As soon as there was blood in the water, Microsoft swooped right in, though it has yet to make a convincing kill. Software companies that bet on OS/2 without a covering bet on Windows are just now recovering from their colossal error. Yet we've been treated to two years of carping from people who simply didn't put good products in front of customers and suffered as a result.

Is this Bill Gates' fault? Only if you believe Microsoft invested perhaps $100 million in engineering the failure of OS/2. Folks in that camp also believe John F. Kennedy is still alive on the top floor of Parkland Hospital in Dallas and that the government has space creatures on ice at an Air Force base in Ohio.

No, I am not so naive as to believe Microsoft is without fault. Rather, Microsoft is the top predator in the software sea and will take every advantage in gulping down a competitor or technology. And like a shark, anyone who turns his back on Bill is signing up for a short, one-way trip to the cosmos.

Still, there is too much Microsoft these days. And anyone who thinks controlling the operating system market doesn't give Microsoft an "unfair" advantage in applications probably needs to get his blood sugar up.

And then there was one ...

The way things seem to be going, the software business could end up looking like commercial aviation, where a swarm of profitable companies has shrunk into an unprofitable handful intent on further collapse. If that happens in software, Microshark, er, soft, would be the last fish swimming — something that might have made Charles Darwin proud.

But survival of the fittest isn't the best way to spur the development of interesting and innovative technology, nor is having one company controlling the infrastructure the best way to build information systems.

The market needs a proper blend of technical innovation from everyone: start-up pressure from below and legitimate competition among the proven players.

Coursey is editor of "P.C. Letter," a San Mateo, Calif., industry newsletter. His MCI Mail address is 556-4460.

[redacted]

Memory

Ocean Information Systems, Inc. has introduced the Hippo IV motherboard.

The motherboard uses the company's Dynamic Cache Accelerator technology and has the ability to boost cache memory efficiency by as much as 300%, according to the company. The product has a byte-gathering write buffer that enables it to simultaneously access information in read and write modes.

A four-level deep, 32-bit wide write-back buffer is also provided. Performance is enhanced with a burst mode in both write-back operation and read operation.

Hippo IV costs $145.

▶*Ocean Information Systems*
Suite 6
12155 Mora Drive
Santa Fe Springs, Calif. 90670
(310) 946-5888, Ext. 5

Application packages

Central Point Software, Inc. has announced PC Tools 8.0A, a maintenance update to PC Tools 8.0.

The update resolves known configuration conflicts resulting from new MS-DOS features.

A superset of utility functions is included in this version, and the product is compatible with Microsoft Corp.'s MS-DOS operating system. Updated programs include Compress, DiskEdit, PC Cache and RAMBoost, which allow users access to MS-DOS features such as Flexboot, disk compression and memory management.

PC Tools 8.0A costs $179.

▶*Central Point Software*
#150
15220 N. W. Greenbrier Pkwy.
Beaverton, Ore. 97006
(503) 690-8088

Vanguard Software Corp. has released HyperCalc 2.0, a tool designed for analysis using mathematical and logical models.

Enhancements have been made to the Hierarchical Tree Editor and in areas such as automatic model documentation, virtual memory and data import and export. The product offers basic analytic capabilities, including complex numbers, units of measure, linear programming, regression analysis, equation solving, matrices and approximately 200 other high-level functions.

HyperCalc runs on all IBM PC ATs and XTs, Personal System/2s and PC compatibles using DOS 2.0 or greater.

The product costs $495.

▶*Vanguard Software*
62 Darling Ave.
Smithtown, N.Y. 11787
(516) 979-6863

Best Programs, Inc. has announced the Capital Budgeting Manager, a software tool designed to simplify the capital budgeting process.

The product works by automatically performing capital asset analyses, depreciation projections and asset and expenditure tracking.

Users can monitor variances between actual and budgeted assets, project depreciation of future capital expenditures and compare the profitability of alternative capital expenditures.

Automatic calculation such as break-even analysis, payback analysis, net present value and internal rate of return can also be performed, according to the company.

The product is an add-on to Best's Fixed Asset Systems, FAS1000 and FAS2000 and costs $585.

▶*Best Programs*
11413 Isaac Newton Sq.
Reston, Va. 22090
(703) 709-5200

Macintosh products

Claris Corp. has announced Version 2.0 of ClarisWorks for the Apple Computer, Inc. Macintosh.

According to the company, the product extends the lead of the Macintosh "Works" program with ease of use, more functionality and superior integration. Three new capabilities have been added to the program and more than 300 productivity enhancements made to existing environments.

A Shortcuts option enables users to have push-button access to frequently used commands. A new outlining feature in ClarisWorks offers users a choice of seven outline formats. Twenty-five color painting tools and effects are also provided.

ClarisWorks 2.0 costs $299.

▶*Claris*
5201 Patrick Henry Drive
Santa Clara, Calif. 95052
(408) 987-7000

Peripherals

Scantron Corp. has introduced Scan Image, a high-speed data entry system.

According to the company, the product can read multiple symbologies such as machine-print characters, mark positions and alphanumeric hand print. Information is decoded by neural network technology, which exports it to any ASCII format, then places the information into a database.

A complete system consists of a microprocessor, Microsoft Corp. Windows-based operating software, a color monitor and a flatbed scanner.

Prices start at $19,500.

▶*Scantron*
1361 Valencia Ave.
Tustin, Calif. 92680
(714) 259-8887

Data I/O Corp. has released the CardPro Universal PC Card Drive.

The product has the ability to read and write all types of Personal Computer Memory Card International Association-compatible memory and I/O cards, the company said.

Using Microsoft Corp. Windows' point-and-click commands as well as DOS Commands, CardPro is configured as another disk drive. Parallel port connection is provided, and an additional parallel port is supplied for transparent pass-through printing operation.

The CardPro Universal PC Card Drive costs $450.

▶*Data I/O*
10525 Willows Road N.E.
Redmond, Wash. 98073
(206) 881-6444

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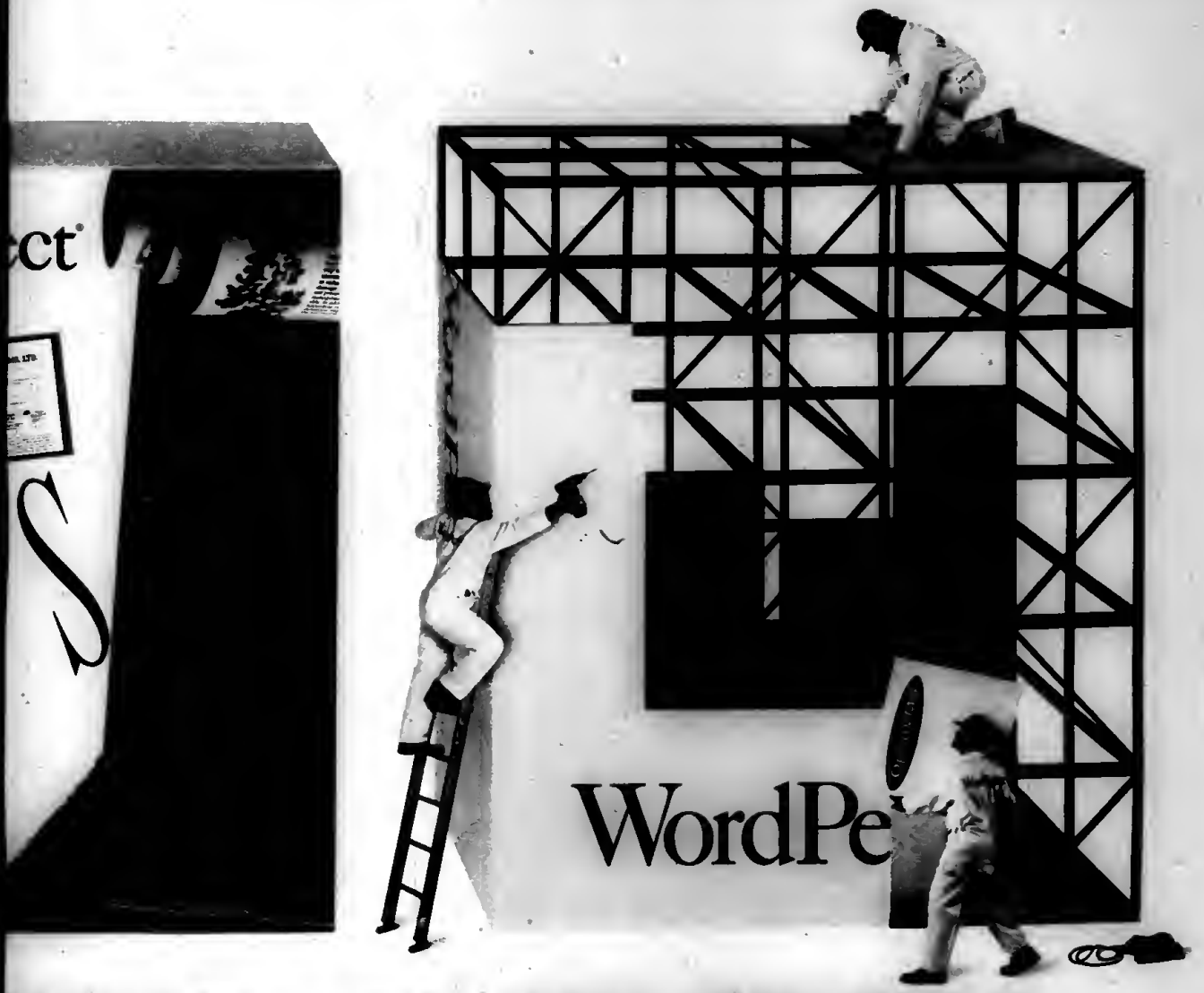

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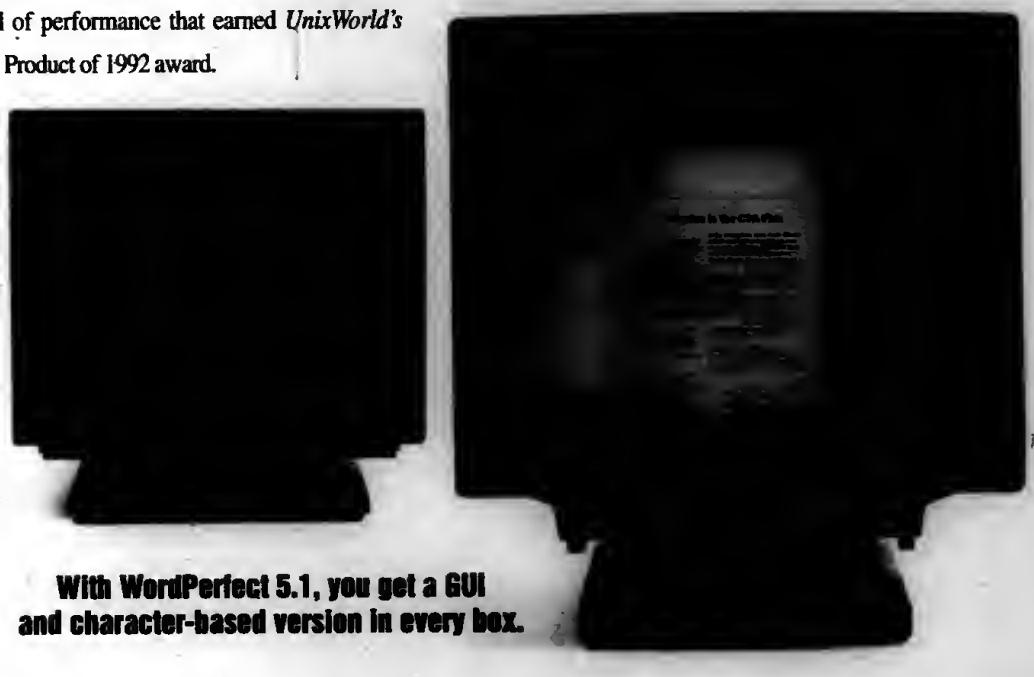
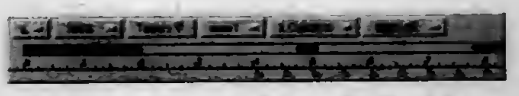


With WordPerfect 5.1, you get a GUI and character-based version in every box.

With WordPerfect's GUI version, you'll enjoy a screen that's clear and easily customized. Extensive windowing abilities for copying or pasting between as many as nine documents at once. Not to mention a Ruler for point-and-click formatting, a Button Bar™ for creating shortcuts to any feature or function, and a very convenient Zoom Edit command.

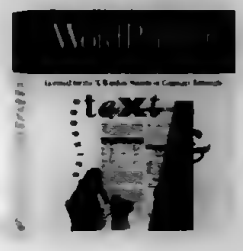
Button Bar. *Turn your most-used functions into single-click shortcuts.*

But what if you don't go for the GUI? Just choose the Character version, and depending on your hardware, you'll get great-looking features rarely seen on a character terminal. Like document preview, column layout, and other important features such as easy-to-use drop down menus and easy-to-understand help screens.



Comprehensive Ruler. *Access dozens of formatting features at the click of a button.*

All of which leads to how easy WordPerfect 5.1 is to support. Its cross-platform compatibility makes transferring documents between other versions of WordPerfect (like DOS or Windows) virtually foolproof. What's more, its functions are familiar to more users than any other word processor in the world.



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Delrina nears release of forms for Windows

May beat Microsoft, WordPerfect

By Michael Vizard
BOSTON

■ Looking to beat both Microsoft Corp. and WordPerfect Corp. to market, Delrina Technology, Inc. in Toronto announced plans at last week's LotusWorld to deliver an electronic forms software package for Windows by June 1.

WordPerfect is slated to announce its delivery schedule for InForms this week, while Microsoft announced its Electronic Forms Designer package late last month.

However, while Microsoft and WordPerfect will bring significant marketing clout to the electronic forms market, industry analysts said Delrina and its rival, JetForm Corp. in Waltham, Mass., currently have a technological edge because they have been in this market longer.

Protocol support

For example, Delrina's FormFlow offering, a follow-on to its existing Forms software for Windows, adds work-flow software and a forms language for building custom forms. It also supports a wide variety of PC and SQL databases, Vendor-Independent Messaging (VIM), Messaging Application Programming Interface (MAPI) and Message Handling Service mail protocols.

In contrast, Microsoft has made available only a forms designer package for programmers who know its Visual Basic language, and WordPerfect's package is currently tied to Windows sites running WordPerfect Office. WordPerfect, which supports both PC and SQL databases, intends to deliver InForms on other platforms later this year, at which time it will also support VIM and MAPI interfaces.

> Users at UCLA liked the Delrina package because it was client/server based and had good security features

"I see the electronic forms market going in two directions," said David Ferris, president of Ferris Networks, Inc. in San Francisco. "There's the client side typified by Microsoft and WordPerfect, and then there's the packages that include work-flow software on the server."

After beta-testing the Delrina and WordPerfect packages for Windows, the Department of Medicine at the University of California at Los Angeles is leaning toward the Delrina software because it supports signature encryption, multipart forms, SQL databases and other server-centric features, said Stephen Berry, director of information service.

"We'll probably go with the Delrina software because it's a client/server package," Berry said. "It also has better security features that show you if someone has updated a form after a signature has been attached to it."

Langley Steinert, director of marketing at JetForm, said the WordPerfect and Microsoft packages are just "scratching at the surface of the electronic forms problem." He said server support and cross-platform capabilities are crucial.

JetForms, which currently includes support for Windows, DOS, PC database servers, a forms designer, filler and merge modules, will add support for SQL databases with the release of Version 4.0 of JetForms this fall. An Apple Computer, Inc. Macintosh version of JetForms is due next month, with Unix support scheduled for summer and OS/2 support planned for year's end.

Pricing for Delrina's FormFlow software starts at $399 for server software, with a 10-user pack priced at $1,840.

Groupware API wars

Rivals to use Notes API

By Michael Vizard
CAMBRIDGE, MASS

in a move that adds to the momentum behind Lotus Development Corp.'s Notes, the vendor has delivered copies of a Notes application programming interface (API) to Microsoft Corp. and WordPerfect Corp., both of which are expected to improve integration of their applications with the Notes file format.

For example, WordPerfect will integrate its WordPerfect Office and InForms electronic forms products with Notes later this year. Microsoft will use the Notes API to make it easier for developers to create Windows applications that interact with a Notes database using facilities such as Microsoft's Dynamic Data Exchange (DDE) and Object Linking and Embedding (OLE) protocols [CW, May 3].

"Stuff like DDE and OLE doesn't quite work with Notes," said Norman Weizer, president of Weizer Associates, Inc., a consulting company in Lexington, Mass.

Mutually beneficial

Competitors have been positioning Notes as a proprietary environment that favors Lotus applications. For example, Coopers & Lybrand recently opted for Lotus' 1-2-3 spreadsheet for Windows over Microsoft's Excel because 1-2-3 offered better integration with Notes.

"We don't want Notes to be a barrier to purchasing Microsoft applications. We want to take that issue off the table," a Microsoft spokeswoman said.

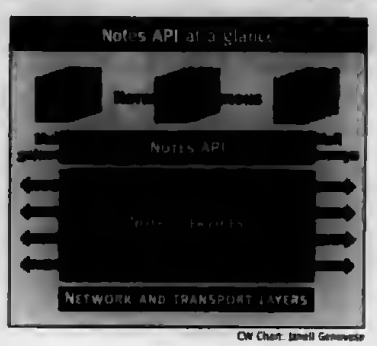
Lotus needs to deliver its Notes API to developers because while Lotus applications are better integrated with Notes, Weizer said that in general, Notes by itself has not been enough to pull in sales of other Lotus applications at the expense of rival tools.

Enhancements to come

However, with the arrival of Notes Version 3.0, Lotus is now delivering a distributed environment capable of supporting enterprise-wide computing. This year, Lotus is expected to deliver add-ons to enhance document management on top of Notes.

Weizer said he views Microsoft's support for the Notes API as a tacit admission that Microsoft is substantially behind Lotus in terms of developing a groupware strategy.

"Microsoft working with the Notes API validates Notes. Microsoft is a long way off from developing anything like Notes, and this shows that they are getting enough pressure to do something about working with Notes," Weizer said.



CW Chart: Janell Genovese

In fact, Jesse Berst, editor of the "Windows Watcher" newsletter, recently told attendees at a Boston University conference on Windows development that he does not expect Microsoft to deliver a competitive offering to Notes until after it delivers Windows NT and Windows 4.0. NT is due to be announced later this month, while Windows 4.0, which Berst said should begin beta testing this summer, is due in the first half of 1994.

Once Microsoft delivers these 32-bit operating systems, the company is expected to focus on delivering electronic mail and database-replication services that provide the framework for groupware applications [CW, March 8].

"Replication and directory services are very straightforward concepts; it's not rocket science. However, making something like Notes that is scalable and easily configurable is where competitors will be challenged," said Ray Ozzie, president of Iris Associates, Inc., a Westford, Mass.-based Lotus spin-off that is responsible for Notes development.

"From a technology point of view, Notes is a unique opportunity to create systems you could never have created before. But whether Notes has an exclusive on that opportunity remains to be seen," said Richard LaValley, senior manager for advanced technology at MCI Communications Corp. in Richardson, Texas.

"Notes may not be the total answer for groupware applications, but it is the best thought out," added Seth Pinksy, director of scientific computing at Smithkline Beecham Corp. in King of Prussia, Pa.

Vendors release host of add-ons for Vines system

By Michele Dostert
SAN FRANCISCO

Third-party vendors introduced a bevy of add-on products for Banyan Systems, Inc.'s Vines local-area network operating system at the recent Association of Banyan Users international conference.

- **Image Engineering, Inc.** in Westerville, Ohio, demonstrated a new imaging and document management package that lets users of Vines and Novell, Inc.'s NetWare LAN operating systems share text and images from almost all networked applications.

The new product, called FolderExpress, will run on Vines Version 5.5 LANs or NetWare LANs that run Banyan's Enterprise Network Services and Microsoft Corp.'s Windows.

FolderExpress lets users organize text and images to individual documents or folders containing multiple files. Files from multiple applications and scanned images can be included in the same folder.

The product will be priced at $995 per server and will ship when Banyan releases its Vines 5.5 tool kit, scheduled for this summer.

- **CCOM Information Systems** in Iselin, N.J., announced a new version of its PhoneLine directory management product that is fully integrated with Banyan's new StreetTalk III directory.

The Windows-based product al-

Vines add-ons, *page 49*

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Graceland: Rockin' to the RS/6000

By Stephen P. Klett Jr.
MEMPHIS

Stepping into the King's castle is akin to stepping back in time. Forever frozen in 1977, the year of Elvis Presley's death, Graceland represents everything that was the 1970s: from lava lamps and big sideburns to rhinestone embroidery. However, to step into the estate's information systems department is to step right back into the '90s.

Graceland, a division of Elvis Presley Enterprises, Inc., recently began a two-phase installation of a state-of-the-art ticket and reservation system from Paciolan Systems, Inc. in Long Beach, Calif.

Since Graceland opened its doors to the public in 1982, it has managed its ticket sales manually. Workers had to hand-stamp tickets according to which attractions visitors wished to see, and tickets for tour groups had to be hand-sorted — often the night before groups were scheduled to arrive.

With nearly 700,000 Elvis worshipers flocking to the estate each year — more than 4,000 a day during peak season — this was a time-consuming and error-prone process.

Graceland had been looking for a computerized system for several years that would integrate its equipment and provide for future scalability, according to Debbie Johnson, general manager at Graceland. "Paciolan was the only vendor we found that offered all of that," she said. "They were more diversified: they looked at everything, not just ticketing."

Graceland's computer system gives Elvis fans quicker access to the estate's attractions

Blue suede software

The system is based on an IBM RISC System/6000 running VMark Software, Inc.'s Universe database management software and Paciolan Systems' Ticket Reservation and Fund Accounting software.

The RS/6000 acts as a central server connecting a network of Apple Computer, Inc. Macintoshes, IBM and Wyse Technology, Inc. terminals and Human Interface Technologies, Inc. touch-screen terminals that are located throughout the estate's corporate, reservation systems, accounting and ticket offices.

Phase one of the conversion consists of installing the RS/6000, integrating the software packages and bringing the ticketing, advanced reservation, group sales and guest services systems on-line. Johnson said the installation began in February and is on schedule to be completed by the end of this month.

Phase two will bring the retail and distribution centers on-line to track sales and inventory of gift shop merchandise. Phase two is slated to start in November 1993 and be completed by the end of April 1994. Johnson estimated that the final cost of the project will be in excess of $650,000.

Johnson said the estate expects myriad benefits from the new system. For example, reservations can be made a day ahead of time, whereas at least two days' notice was required. Johnson said visitors can now avoid up to a three-hour wait by booking a tour for the following day.

Hot attractions

Another major benefit is the ability to automatically track the revenue generated by each of the estate's attractions, Johnson said.

The attractions, which generate $15 million a year, include the Lisa Marie and Hound Dog II airplanes, Elvis' extensive automobile collection and a museum housing many of Elvis' personal mementos and stage costumes.

In addition, the reservation systems department will be able to accommodate changes more easily. Johnson said this will be most helpful during the anniversary of Elvis' death in August, when most changes occur. "Now the reservation office is looking foward to August instead of fearing it," she said.

The system offers future benefits as well, Johnson added. "We will be able to connect to other ticket companies to give us an outlet in Memphis, for example, as well as other cities," she said.

So far, Johnson said, no major snags have appeared in migrating to the new system. However, she said the system did crash on Easter weekend — the busiest weekend of the year so far. Paciolan was able to help the IS department solve the problem over the phone, and the system was brought back on-line in 20 minutes.

Sun alliance ships software for shop floor

By Stephen P. Klett Jr.

■ In a move to parlay their success in the financial arena into the manufacturing market, Sun Microsystems Computer Corp. (SMCC) and Teknekron Software Systems, Inc. recently announced shipment of a distributed software system for the factory floor.

The announcement builds on a partnership formed by the two companies in 1987 that provided the financial industry with Teknekron's Information Bus technology running on Sun Microsystems, Inc. workstations, a union that has met with considerable success on Wall Street, for example.

Analysts said the move is the latest in a string of partnerships Sun has formed with third-party manufacturing software developers. For example, Sun forged similar agreements with Promis Systems Corp. and Cimflex Teknowledge and is negotiating with SAP AG and The ASK Group, Inc. to port their manufacturing applications to the Scalable Processor Architecture (SPARC) platform.

The SMCC/Teknekron partnership will provide Teknekron's Manufacturing WorkBench suite of software tools running on Sun's SPARCstation line. The suite is based on Teknekron's Information Bus technology and is available now for the SunOS operating system. It is slated to ship for Solaris 2.0 in September.

Manufacturing WorkBench allows users to build applications in a distributed, client/server environment that can incorporate changes to data in real time, according to Teknekron. The Information Bus technology enables disparate applications to communicate.

Teknekron estimated the cost of installing the software at approximately $5,000 per workstation.

No market leader

Sun currently lags a distant fourth behind Digital Equipment Corp., Hewlett-Packard Co. and IBM in terms of installed base on the factory floor, according to industry analysts.

"Sun has not played a big role on the shop floor," said Julie Fraser, chief analyst for "The AMR Report," an industry newsletter published by Advanced Manufacturing Research Corp. in Cambridge, Mass. "However, they are getting aggressive and have developed a strategy to change that."

Indeed, Sun's third-party strategy appears to be paying dividends.

For instance, Lafarge Corp., one of the largest cement manufacturers in the U.S., is using a network of SPARCservers and SPARCstation 2 workstations to control the production of cement at its plant in Alpena, Mich.

According to Don Everett, process manager at the plant, the company chose Sun based on an evaluation by its third-party software supplier, Johnson Yokagawa. The plant runs Johnson Yokagawa's XL-Net distributed control software package.

To date, "there have been no problems with the Sun equipment, and I am positive this is the right direction to go," Everett said.

Vines add-ons

CONTINUED FROM PAGE 47

lows Vines users to quickly find and update information, including pictures, about StreetTalk objects such as users, servers and printers. The information can be pasted into documents, sent via electronic mail as image files, compiled into lists or used to dial phone numbers.

PhoneLine for StreetTalk III is available now and is priced at $795.

• **TCE Technology Group** in San Jose, Calif., introduced BanScan II, a server-based enterprisewide management product for Vines networks that allows administrators to manage servers, routers and hubs from a single Simple Network Management Protocol (SNMP) station.

The new product adds continuous, real-time server statistic monitoring, on-screen utilization trends, threshold alarm notification and custom graphing and reporting.

BanScan for Vines is available now at $795 per server.

According to TCE executives, BanScan II will be available for NetWare and SNMP LANs by the end of the second quarter, with The Santa Cruz Operation's SCO Unix version due by the end of the third quarter.

• **NetPro Computing** in Scottsdale, Ariz., introduced several Vines add-on products.

Network NewsReader is a Windows interface for accessing internal services from Vines networks. MailPro, a DOS E-mail product for Vines, lets users handle their messages without returning to the main screen.

MailPro allows users to handle multiple messages, as well as sort, locate, filter, encrypt, spell-check and cut and paste messages. StreetWalker, a new Vines administrative tool, is a configurable, Windows-based interface that allows administrators to save frequently accessed names, groups and servers as pop-up icons that can be dragged and dropped.

• **Zoomit Corp.** in Toronto announced the release of an X.500-based directory service called Enterprise Directory Management Service (EDMS). The new product acts as a directory hub, storing and managing addresses in a central database and exporting desired information in a format that can be read by the receiving system.

EDMS can import and export from E-mail address directories in other proprietary systems.

The product is available now, with prices beginning at $800.

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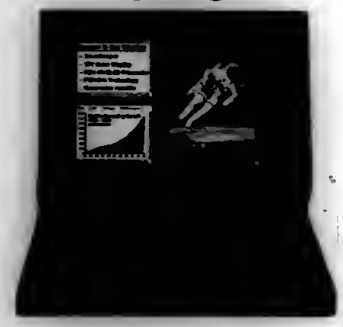

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Workgroup software applications

Project Software & Development, Inc. has announced Version 1.1 of Project/2 Series X (P/X), advanced project management software.

Unix support has been added to this version, including Sun Microsystems, Inc.'s Scalable Processor Architecture platforms running SunOS 4.1.3 and Motif 1.1 or Open Windows 3.0.

The Unix version runs in a client/server environment with a graphical interface that uses pull-down menus and click-and-drag project planning. Features include extensive graphics and resource management, cost/schedule integration and new customization tools.

P/X Version 1.1 prices start at $30,400 for a five-user local-area network.

▶ *Project Management & Development*
20 University Road
Cambridge, Mass. 02138
(617) 661-1444

File servers

Network Appliance Corp. has introduced FAServer, a file server appliance designed for Network File System workstation networks.

FAServer works in conjunction with FASware, the company's software running on an Intel Corp. i486 Extended Industry Standard Architecture (EISA) bus system, and it includes Snapshot, a backup feature that provides an automatic backup and file history capability.

A Small Computer Systems Interface controller, one or two Ethernet interfaces and two to seven 3½-in., 1G byte or greater disk drives are included.

A 486 CPU with a 16M- or 32M-byte EISA bus with eight slots, 2M bytes of nonvolatile random-access memory and a 1.44M-byte floppy disk drive, keyboard and monitor are also provided.

FAServer costs $16,995.

▶ *Network Appliance*
Suite 208
2901 Tasman Drive
Santa Clara, Calif. 95054
(408) 562-1900

Electronic mail

Enable Software, Inc. has introduced Higgins Mail for Windows Version 1.0, an electronic-mail package for Microsoft Corp.'s Windows 3.1.

Version 1.0 can send and receive messages and files across an assortment of local- and wide-area network environments. It notifies users of incoming mail and urgent status, the firm reported.

The product also features private lists, hot buttons to view next and previous messages, in-basket sorting, out-basket review and a keyword retrieval system.

Higgins Mail for Windows Version 1.0 costs $195.

▶ *Enable Software*
313 Ushers Road
Northway 10 Executive Park
Ballston Lake, N.Y. 12019
(518) 877-8600

SoftArc, Inc. has started shipping a Microsoft Corp. Windows-based front end for its FirstClass electronic-mail conferencing and remote access software.

FirstClass Client for Windows offers features that resemble its companion product FirstClass Macintosh client, which enables users to connect Apple Computer, Inc. Macintosh FirstClass servers by accessing network or modem E-mail and groupware.

Without dedicated Novell, Inc. file servers, Windows and Macintosh users can access the same nondedicated FirstClass server. The product can simultaneously accommodate up to 250 users with mixed combinations of connections.

FirstClass Client for Windows costs $295 for unlimited users.

▶ *SoftArc*
Suite 102
805 Middlefield Road
Scarboro, Ontario M1V 2T9
(416) 299-4723

Unix

Digital Instrumentation Technology, Inc. has introduced TransferPro for Sun Microsystems, Inc.'s Solaris 2.1 and TransferPro for Silicon Graphics, Inc.'s Motif.

According to the company, these two software programs enable Unix users to perform all standard Apple Computer, Inc. Macintosh and MS-DOS file operations between workstations and PCs and workstations and Macintoshes. Copying, renaming, creating and removing files and directories and deleting are some of the operations.

Files can be transferred to Small Computer Systems Interface devices and to magneto-optical drives.

Both TransferPro Sun Solaris 2.1 and TransferPro Silicon Graphics Motif single-user versions cost $349. A single floating license costs $849.

▶ *Digital Instrumentation Technology*
Suite 20500
127 Eastgate Drive
Los Alamos, N.M. 87544
(505) 662-1459

Storage

Micropolis Corp. has announced Raidware for NetWare 4.0.

The product is Novell, Inc. NetWare-compatible software for the company's Raidon line of fault-tolerant disk array subsystems. The software enables Raidon to provide fault-tolerant data storage for network users who have decided to upgrade to the next generation of NetWare software.

According to the firm, the disk array comprises an assortment of array modules that include a high-performance Micropolis disk drive, cooling fan and power supply. Capacity for Raidon can be configured from 680M to 65G bytes.

Prices start at $6,665.

▶ *Micropolis*
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Swiss Bank blends nets

By Joanie M. Wexler
LISLE, ILL.

When Swiss Bank Corp. and The O'Connor Partnerships officially merged last fall, one result was a sprawling wide-area financial network that carried a management load greater than the sum of its parts.

A key challenge for the new entity, which uses the Swiss Bank moniker, was getting its arms around the magnified cost control, reliability and security issues that were sure to rear their heads with the blending of two previously disparate, mission-critical networks.

Trading firm O'Connor, which had run a domestic network, merged with Swiss Bank's 35-node, worldwide Ascom Timeplex-based T1 network, which carried primarily voice and IBM Systems Network Architecture (SNA) host traffic. Meanwhile, the new entity blended the SNA/voice network with a new router-based internetwork to accommodate emerging local-area network traffic.

Consolidating O'Connor's trading traffic and Swiss Bank's financial transactions onto one infrastructure would likely require greater investments in telecommunications bandwidth, the organization realized.

Enter a low-profile device that staved off new Swiss Bank expenditures in wide-area network capacity for at least six months, said Chris Puetzfeld, a director of information technology at Swiss Bank's Capital Markets and Treasury business here.

Last November, the firm inserted compression-oriented Symplex Communications Corp. Datamizer IVs between its Wellfleet Communications, Inc. routers and Ascom Timeplex multiplexers in about nine sites worldwide.

The No. 1 reason Swiss Bank invested in the 18 $11,000 devices was the economics of the 2-to-1 to 10-to-1 data compression, which the company said effects an equipment payback in transmission savings in as little as one month.

However, some "freebies" emerged to keep the enterprise network humming, Puetzfeld said, when the firm discovered that the Datamizer also included error-detection, load-balancing, inverse multiplexing, congestion control and other smart management features.

ON SITE

Swiss Bank Capital Markets and Treasury
Lisle, Ill.

Goal: To curb telecom costs and consolidate network traffic.

Technology: Symplex Communications' Datamizer IV compression devices.

Results: New bandwidth investments delayed for six months and "freebies" provided in the area of network uptime and efficient management.

For redundancy, the financial giant had installed dual network devices, including Datamizers, in several hub sites, as well as backup telecommunications circuits slated to take over in the event of a primary link outage. The Symplex device found an important role in this industrial-strength configuration.

"The Datamizer watches closely for a network outage and routes all traffic over the one remaining good line," said Mike Raffety, a Swiss Bank network engineer. "It handles the big propagation delays common with satellite, should a carrier reroute us that way, so it blends terrestrial and satellite traffic well."

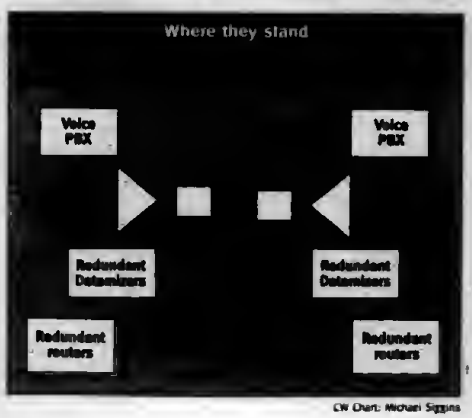
Raffety added that the Datamizer continuously monitors use of the company's T1 trunks. "We can set thresholds, above which the Datamizer bumps voice traffic off the T1 onto the switched network, giving T1 priority to the data."

Voice traffic from the firm's various private branch exchanges (PBX) is compressed separately; then, both Datamizer-compressed and PBX traffic flowing through the T1 multiplexers is encrypted through devices sitting between the multiplexers and telecommunications lines.

Also, where "we're running two circuits at different speeds for redundancy, the Datamizer will use both efficiently," which goes beyond the standard capabilities of most of today's inverse multiplexers, Raffety said.

While the firm's high-end multiprotocol routers perform some network reroute functions, Datamizers are more specialized for maximizing network use and uptime than routers, whose primary function is to shuttle traffic from one LAN to the next, Raffety said.

On the compression side, the Datamizer's performance depends on the type of traffic being transmitted, he added. For example, "a formatted report with lots of white space should compress extremely well, probably 6-to-1," he said. "But the Datamizer wouldn't have much effect on a file already compressed by the Unix 'compress' command and transmitted by Unix's File Transfer Protocol."



CW Chart: Michael Siggins

Fed encryption plan gets mixed reaction

Foes wonder if Uncle Sam can be trusted

By Gary H. Anthes
WASHINGTON, D.C.

Enthusiasm for Clipper, the federal government's new encryption technology, has been conspicuously absent among users, vendors and editorial writers since it was unveiled three weeks ago.

However, a few users and cryptography experts have praised the technology, agreeing with the government that it will offer robust security to users while helping law enforcement agencies fight crime through court-approved wiretaps.

Clipper, which embeds a secret encryption algorithm in a commercially available silicon chip, uses an approach called "key escrow." Two keys are needed to unscramble Clipper-encoded data or voice communications, and under the government proposal the keys would be stored at two as-yet undetermined sites managed by government agencies or private concerns. A law enforcement agency would be able to get the keys only via a court order, as is the case today under wiretapping laws.

Encryption option

In addition to the government's official Data Encryption Standard, users can protect data communications with RSA encryption, licensed by RSA Data Security, Inc. in Redwood City, Calif. RSA is used by a number of major U.S. suppliers of computer hardware and software, including Lotus Development Corp. in Notes and Novell, Inc. in NetWare 4.0.

"The good news is that the algorithm appears to be robust," said Ralph S. Poore, director of information security services at Coopers & Lybrand in Dallas. "And the approach appears to balance privacy issues with law enforcement requirements. Your conversations today — the law notwithstanding — are public. What this permits is for us to have private conversations where the only circumstance under which eavesdropping is probable is where someone has a lawful court order."

Others have been less enthusiastic — and less sure that Uncle Sam could always be trusted to do the right thing with technology. At a recent hearing on communications security and privacy, House Telecommunications Subcommittee Chairman Edward J. Markey (D-Mass.) said, "One has only to look at the Inslaw case to see the potential dangers."

Markey was referring to a case in which a federal court found that the U.S. Department of Justice stole software from a small company and covered up the theft in the face of multiple investigations.

Some have questioned the secrecy of Clipper's algorithm, saying it leads to the suspicion that it contains a hidden "trapdoor" that could allow unauthorized intrusion. The government has emphatically denied that any trapdoor exists and has offered to submit Clipper to an independent party of experts for scrutiny.

Data encryption is of vital inter-

Encryption plan, *page 60*

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NCD beefs up X software for Windows

By Joanie M. Wexler
MOUNTAIN VIEW, CALIF.

X Window System vendor Network Computing Devices, Inc. (NCD) said last week it intends to ship in June a reinforced PC X server application for the Microsoft Corp. Windows operating environment.

NCD's forthcoming PC-Xware will replace the vendor's existing PC X server product for Windows, PC-Xview.

Users have a choice of three local window managers with NCD's 32-bit PC-Xware for Windows OpenLook, Motif and Windows

NCD has ported its NCDware operating system to the native Windows environment to give general-purpose PCs the enterprise-oriented benefits of dedicated terminals optimized for X, said Judy Estrin, NCD's executive vice president. Such characteristics include faster performance and central support and administration, said Robert L. Warmack, director of marketing at the company's PC-X Division in Beaverton, Ore.

NCDware 3.0 is the latest operating system for NCD's market-dominant X terminal family. X terminals and PCs running X software (called PC X servers) can access remote applications networked across enterprise hosts also running X; applications appear to run locally in windows on high-resolution displays.

NCD's 32-bit, $545 to $795 PC-Xware software bundles functions users previously had to buy separately, such as host terminal emulators and network transport protocols, Estrin said.

The 32-bit software brings NCD up to speed with PC X server rivals Hummingbird Communications, Inc. and Age Logic, Inc. in the Windows market, said Eileen O'Brien, director of the terminals and PC connectivity program at International Data Corp. in Framingham, Mass.

O'Brien added that NCD's PC-Xware could appeal to NCD X terminal users who work at home or on the road with PCs but want the same functionality as provided by their terminals.

Age Logic said it will announce this week PC X server software for Microsoft's Windows NT technology. NCD said it plans to port PC-Xware to Windows NT.

XcelleNet unveils software tools for laptop computers

By Elisabeth Horwitt
ATLANTA

XcelleNet, Inc. is targeting mobile laptop users with new versions of the RemoteWare Applicomms family of electronic forms-generation and routing software.

Version 1.3 of RemoteWare Forms adds support for maintaining subsets of databases at remote systems. A laptop calling into the corporate computer automatically has its database updated from master files.

Version 1.3 also supports sequential, conditional routing of forms across wide-area links and embedded querying tools. The new version is priced at $7,500 plus $225 per remote node and is scheduled to ship May 28. An optional Query server is priced at $4,500.

Transmission efficiency

RemoteWare Documents 1.2 includes a new automatic data compression feature that is said to maximize the transmission efficiency of host connections using a hotel telephone or cellular modem. A new object editor allows users to include text, graphics and photographs in reports. The product is priced at $1,500 plus $125 per remote user.

RemoteWare Reports 1.2 allows users to download tables of contents and select parts of a file. RemoteWare Mail 1.3 supports access to electronic-mail services via the X.400 standard.

Availability for the latter three products is slated for June 28.

ISDN, telecommuting link studied

By Mitch Betts
WASHINGTON, D.C.

Telecommuting, already practiced by 2 million people, has the potential to substantially reduce traffic congestion, air pollution and gasoline consumption, according to a study by the U.S. Department of Transportation.

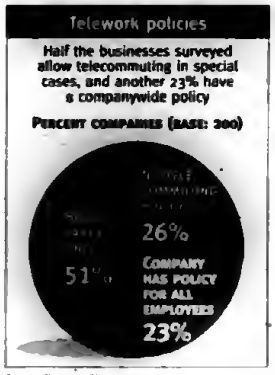
The agency conservatively estimated that by 1997, there may be 3 million telecommuters in the U.S.; that could reduce the nation's gasoline consumption by 476 million gallons a year and reduce emissions by roughly 1%.

However, the study acknowledged that telecommuting, where people work a few days a week at home or in a satellite office, is a relatively new trend full of uncertainties.

For example, the study said it is unknown whether telecommuting will stimulate "suburban sprawl" or whether the absence of telecommuters on the road will encourage other people to switch from public transportation to driving to their office in single-occupant cars.

The study, which draws on research by Link Resources Corp. in New York, was requested by U.S. Sen. Conrad Burns (R-Mont.). Burns argued that a nationwide fiber-optic network should be built so employees can "travel to work on information highways instead of our traditional highways."

The transportation study indicated that today's telecommunications services and equipment are adequate for most telework applications, but high-bandwidth networks will be needed in the future and would be beneficial even today for certain applications.



Source: Business Research Group

The adequacy of today's network infrastructure is one of the great debates in telecommuting circles, especially because upgrading the public network is expected to cost billions of dollars.

"When phone company people start talking about the telephone network necessary to support effective telecommuting, I always grab my wallet," said Michael Crampton, director of telecommunications at Hartford, Conn.-based The Travelers Corp., at a conference last October.

On the other hand, experts said the Integrated Services Digital Network (ISDN) Basic Rate Interface (BRI) would be ideal for allowing at-home customer service agents to handle voice calls and quickly call up customer data files.

The well-known problem with ISDN, however, is limited deployment.

Even the much-heralded National ISDN-1 standard "does little to encourage BRI deployment, since Southwestern Bell Corp. and US West do not plan to promote its use," according to a recent report by the Business Research Group in Newton, Mass.

Gil E. Gordon, a telecommuting consultant based in Monmouth Junction, N.J., staked out the middle ground. "We can do an awful lot with the technology we have today ... but ISDN's bandwidth will open a lot more possibilities," he said.

For example, broadband ISDN would provide faster transfers of large files and the convenience of having multiple phone lines over a single wire, Gordon said. ISDN also promises videoconferencing, but very few telecommuters really need video, he said.

According to Gordon, companies' "should not hold their breath" waiting for ISDN before starting a telecommuting pilot. "I'd be hard-pressed to think of an organization that couldn't do some telecommuting without ISDN," he said.

HP, UB offer NetDirector for Unix

By Elisabeth Horwitt

Hewlett-Packard Co. and Ungermann-Bass, Inc. have entered a joint development agreement whose first fruit is a Unix version of UB's network management platform, NetDirector.

NetDirector for Unix will provide management of UB hubs, as well as Simple Network Management Protocol-based network devices, through HP's OpenView Network Node Manager, the vendors said.

The product will initially be able to call up the IBM OS/2-based NetDirector as an icon; greater integration is due in December, UB said. Thus, the Unix system will be able to act as an umbrella manager for multiple OS/2-based management systems.

Available this month, NetDirector for Unix supports Sun Microsystems, Inc.'s SunOS and HP/UX versions of HP OpenView. It is priced at $3,000, unbundled.

UB also announced FocusView, a series of graphical network management applications for its Access/One Enterprise Hubs that will run on the Unix platform. One application manages UB Ethernet links; another, Token Ring connections. Both are priced at $3,500.

A third application, Access/One FocusView, provides overall management of UB Access/One hubs, for $2,500. FocusView applications will be available on the OS/2 NetDirector later this year, UB said.

HP and UB said they plan to work cooperatively to develop integrated management of distributed local-area network installations, particularly on the data and application levels, the companies said.

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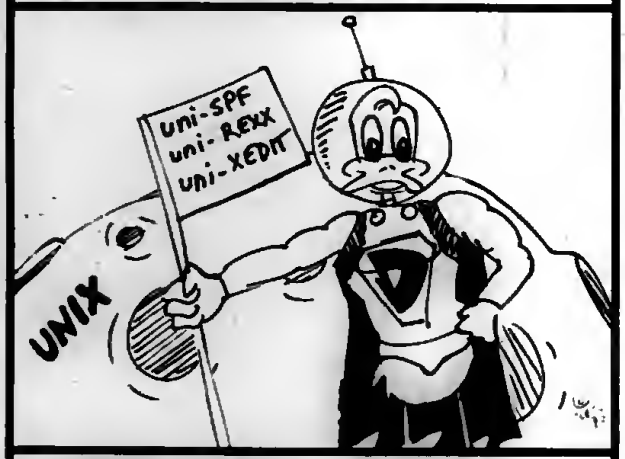

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Encryption plan

CONTINUTED FROM PAGE 57

est to the banking industry, which uses the government's aging Data Encryption Standard (DES) for funds transfer and for communicating with large customers, branch offices and the Federal Reserve System. Steve Katz, an official at a large multinational bank and chairman of the information security committee at the American Bankers Association, said bankers are worried that a government-mandated change from DES to Clipper would be expensive and disruptive.

In for the long haul

However, federal officials insisted DES is not to be abandoned anytime soon. The National Institute of Standards and Technology (NIST) will recommend that DES be recertified as a federal standard for another five years, during which time NIST will work with the industry to evaluate alternatives to DES. In the meantime, "Anyone is free to buy and sell any other encryption technology in the U.S.," said Raymond Kammer, NIST's acting director.

Clipper supporter Dorothy E. Denning, professor and computer science chairwoman at Georgetown University, said user and vendor concerns about Clipper can and will be worked out in a review of government policy on encryption, privacy and law enforcement mandated by President Bill Clinton. She praised the government's efforts to preserve the options of law enforcement agencies.

"Over the long term, it is extremely important that we be able to deal with serious crime in an effective way," Denning said. "If technology were to go in a direction that caused us to lose part of that capability, it could have very serious consequences for society."

In answer to criticisms that criminals will simply use encryption methods other than Clipper, Denning said, "If Clipper becomes cheap and ubiquitous, that's what people will use, regardless of who they are."

Vendors and users said they hope to play an active role in the government's review of encryption policy and practice. Oliver Smoot, executive vice president of the Computer and Business Equipment Manufacturers Association, said, "In our discussions [about Clipper] with the White House team, there was an indication of openness to the private sector that has not appeared in the past."

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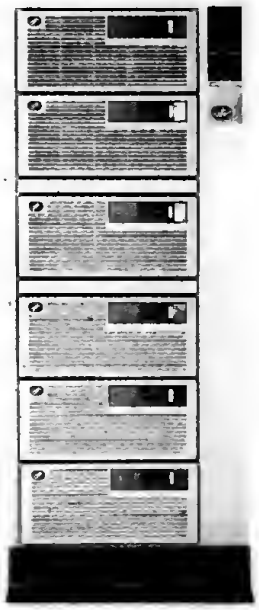

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WAN software

Niwot Networks, Inc. has introduced the Niwot Digital Data Mover (DDM).

According to the company, the Niwot DDM is a PC-based product that provides nearly full use of existing bandwidth in station-to-station or local-area network file transfers. Features for the product include high link rate utilization, wild cards with full pathing options, full or selective file transfer and an optional compression co-processor.

Functions such as bulk file distribution, remote backup/restore, database updates and electronic-mail distribution are also provided.

Niwot DDM costs $895 per node.

▶ *Niwot Networks*
Suite B
2200 Central Ave.
Boulder, Colo. 80301
(303) 444-7765

Gateways, bridges, routers

Retix has introduced three additions to its RouterXchange 7000 (RX 7000) family of high-performance, reduced instruction set computing-based multiprotocol routers.

The RouterXchange Model 7550 is a five-slot chassis that holds up to four forwarding processors and offers the option of dual high-performance power supplies. Support for as many as 12 local- and/or wide-area network interfaces is provided, the company reported.

The RouterXchange Model 7250 is a high-performance feeder node for other RX 7000 models.

The 10Base-T Hub Card was designed for integrated routing and bub facilities, and it can be added to any of the RX 7000 models.

Model 7550 prices start at $11,200, Model 7250 prices begin at $6,200, and the 10Base-T Hub Card is priced at $2,000.

▶ *Retix*
2401 Colorado Ave.
Santa Monica, Calif. 90404
(310) 828-3400

Systems Network Architecture

Systems Strategies, Inc. has introduced Systems Strategies Express Integrated Desktop.

According to the company, the product is a communications software package designed to bring Unix connectivity solutions into corporate environments by enabling users to integrate data from IBM Application System/400s, Digital Equipment Corp. VAXs and mainframes to the Unix desktop.

Express Integrated Desktop has a graphical user interface that provides a common user interface across every application. The product is compatible with a variety of windowing environments and is IBM Systems Application Architecture-compliant, according to the company.

Express Integrated Desktop costs $1,000. The Workstation version is available in one-, five- and 20-user packs for $500, $2,000 and $7,500, respectively.

▶ *Systems Strategies*
1 Penn Plaza
New York, N.Y. 10119
(212) 279-8400

Micro-to-host

Firesign Computer Co. has introduced Outbound 3.0, a file-transfer program.

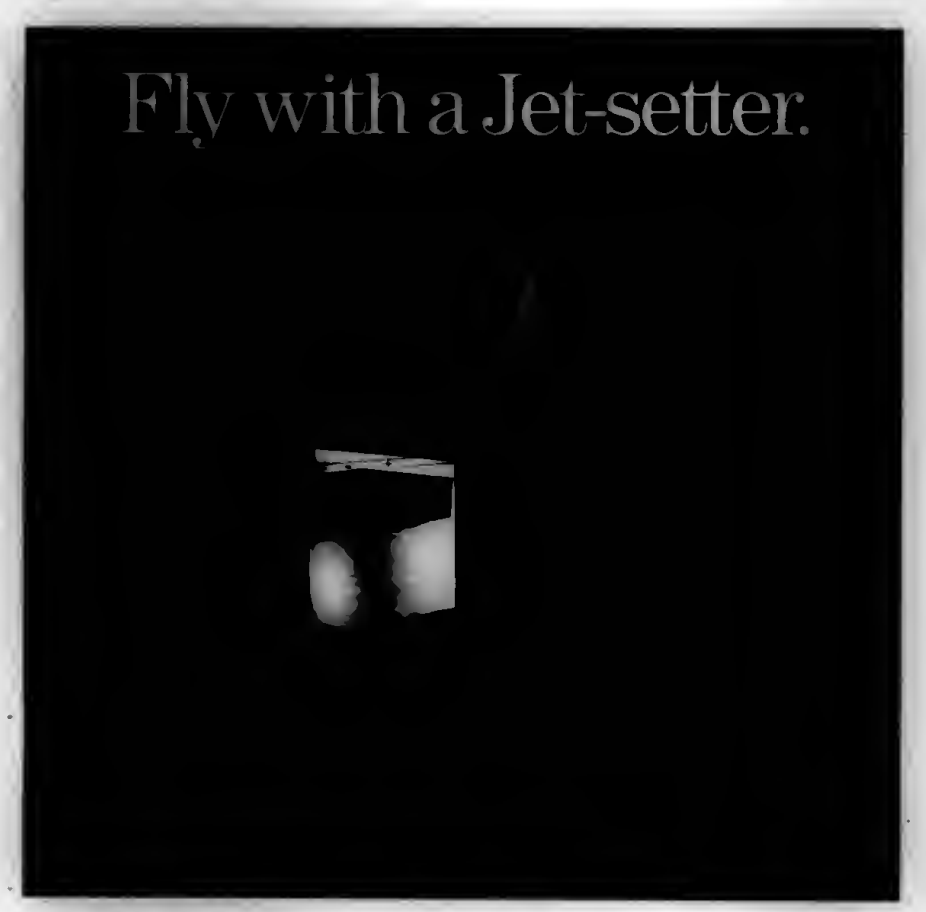
According to the company, Outbound extracts data from unattended PCs up to four times faster than its predecessors. The product is a terminate-and-stay resident application that enables the mainframe or host to initiate the transfer at any time.

The PC can be used for another project while the files are being transferred. Data is exchanged between IBM 370 or 390 mainframe systems operating on any current version of MVS or VM, the company said.

PCs with 3270 emulation, Microsoft Corp.'s Windows, OS/2 or DOS can be connected.

A typical installation costs $20,000. Individual PC software copies cost $150 for Windows and DOS and $300 for OS/2.

▶ *Firesign Computer*
480 Green St.
San Francisco, Calif. 94133
(415) 398-7228



The HP Output Stacker is a great place for documents to land after a whirlwind trip through the HP Paper Feeder and HP LaserJet 4Si or 4Si MX printer.

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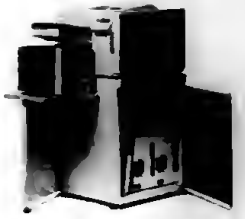

If the printer's output bin meets your needs, look into the HP Paper Feeder and the *HP LaserJet Printer Cabinet*—custom designed to hold supplies, as well as the printer.

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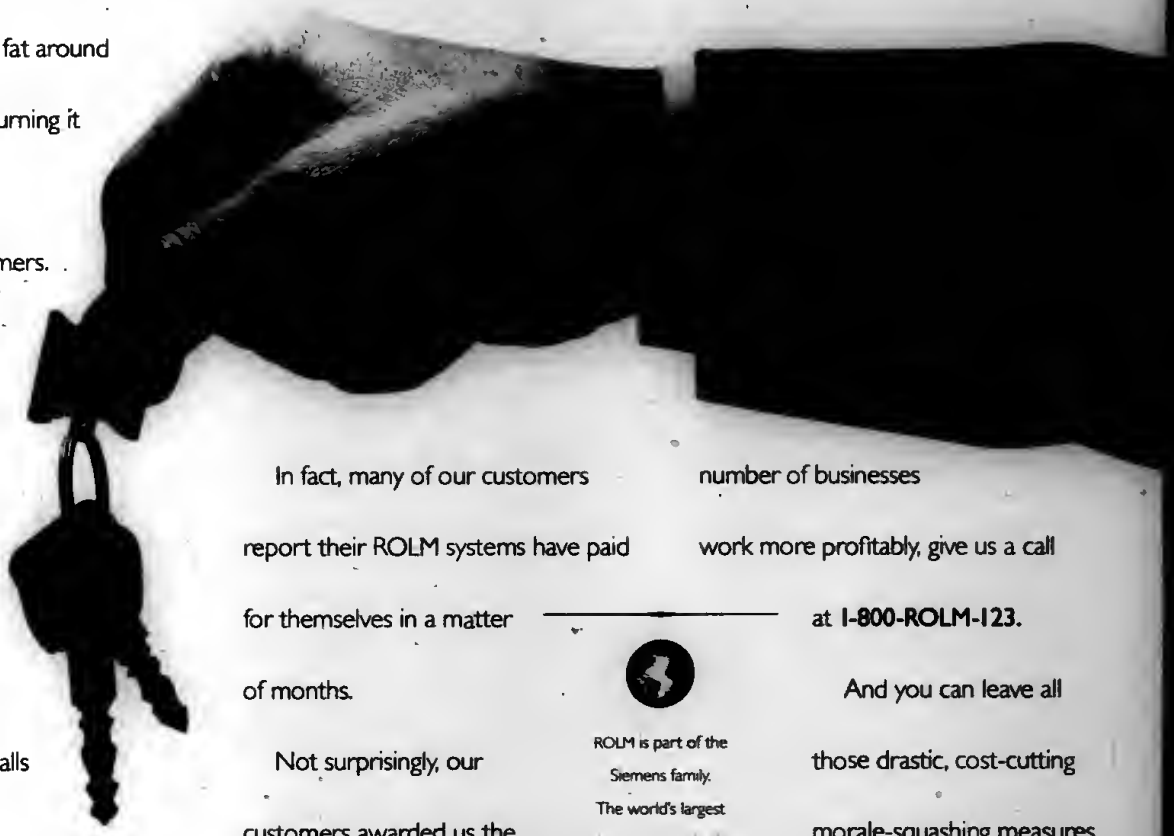
Then there are the infinitely more interesting stories of enormous revenue gains. West Capital Financial Services, for example, pulled in a colossal 357% of their previous year's revenues.



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IBM Business Partner

IBM Posix-compliant MVS, parallel processor on way

By Johanna Ambrosio
DALLAS

■ IBM is on schedule to deliver both its parallel-processing database management engine and its Posix-compliant version of MVS, according to Guy Harrison, IBM's director of enterprise products and head of the large systems laboratory in Poughkeepsie, N.Y.

In fact, Harrison said, both products are already installed in at least one beta-test site each, which he declined to name. The Posix interface was introduced in February, and the parallel computer will make its formal debut by summer, IBM executives have hinted.

Harrison disclosed some details of the coming products, which will be generally available next year. He made his remarks at a recent meeting of the Association of Computer Operations Managers here.

Keeping track of data

At the heart of the parallel-processing computer — a query engine that will hook up as many as 32 IBM Enterprise System/9000 mainframes — will be the Shared Data Facility. This will keep track of where data is and which processor is doing what work. A so-called Workflow Manager will move resources around.

"You'll be able to run work wherever there's processing power," Harrison said. The various pieces will be connected via IBM's Sysplex architecture.

Oldies need not apply

Harrison said, however, that the Shared Data Facility will not be accessible to all of IBM's older mainframes. "Not every machine we have can connect up to this. We couldn't go back as far as we would have liked," he said.

The machine will work like this: When a database query comes in, the query will be analyzed to determine whether it is a complex query and how best to break it up. The query will then be broken into pieces, or "parsed," and will then run on a series of engines under DB2. The parsing piece of the pie is coming from a third-party vendor that Harrison did not identify.

To use the parallel processing engine, Harrison said, customers probably will have to be up to date on the most recent versions of IBM

Posix-compliant MVS, *page 73*

Users cheer Unisys

By Thomas Hoffman
PHOENIX

Users of Unisys Corp. systems not only are encouraged about the vendor's financial turnaround but also are beginning to embrace Unisys' increased emphasis on delivering open systems and services, according to customers at the recent Cube and Use, Inc. joint user conference here.

For example, one of the chief reasons behind the recent purchase of a Unisys 2200/9222 mainframe server by the Massachusetts Department of Employment and Training was the system's ability to interface with Unix platforms and other distributed environments.

According to Dennis Thompson, the Boston-based agency's information systems director, the mainframe, installed March 8 to replace an aging Unisys 1100/94 mainframe, is being used to process unemployment insurance claims and other employment-related data.

Up to capacity

Thompson said he expects the mainframe to solve capacity issues while reducing maintenance and environmental costs. He said the 1100 system had been running at 95% CPU capacity and 90% memory capacity.

In contrast, the 2200 system is running at only 15% of its total capacity. "We liked the 2200 for its interoperability with multivendor platforms," said Thompson, who is looking at additional systems based on Unix, IBM's OS/2 and Microsoft Corp.'s Windows.

Unisys appears to be meeting the price/performance mark for customers with low-end requirements, too. Rick Zizak, IS manager at The Millcraft Paper Co., a $110 million paper manufacturer in Cleveland, said his firm recently selected six Unisys PW2 4256 PCs after testing them against Gateway 2000, Inc. PCs. The Unisys PCs, Zizak said, "offered a better price point and were more reliable," than the Gateway 2000 machines.

Looking at Unisys' services, Michael D. Barry, a manager in the computer services bureau at the City of Phoenix Police Department, said the law enforcement agency has tapped Unisys for a set of services under a handful of separate projects. For example, the department last year signed a $325,000 services contract as part of a bar-coding system used to track impounded property. That system is linked to Pace, or Police Automated Computer Entry, an on-line system that automates the data input and processing of police reports, field interrogations and information on arrests.

Pace, a $2.9 million system based on Unisys' LINC II fourth-generation language software, has been operational at the department since June 1989. Barry said the Pace contract included a $900,000 services agreement with Unisys for programming and systems analysis.

Barry said Unisys' services have been first-rate, leading him to consider the vendor's services for future projects. "Our experience with Unisys gives us added confidence," he said.

However, there were a few attendees who noted concerns about the vendor's escalating maintenance costs, including A. Alden Hofling,

Unisys, *page 68*

Company adding VAXs as LAN servers

By Michele Dostert

Sometimes the right business decision is the opposite of the one everyone else is choosing. A case in point is HealthCare Compare, a Downers Grove, Ill., medical cost-management company that is bucking the downsizing trend by moving its databases and custom-built applications off its local-area network servers to a cluster of Digital Equipment Corp. VAXs.

Company officials stressed that the move was not prompted by dissatisfaction with LANs. "Our [Novell, Inc.] NetWare LANs were key to our success because we could expand our computing rapidly and inexpensively to match our explosive growth," said John Krakower, HealthCare Compare's executive vice president and chief operating officer.

HealthCare Compare grew from 400 employees in 1988 to more than 1,500 in 1992. "We're not throwing our LAN away; we'll just be running LAN-based client/server applications against an integrated database stored on several VAXs, rather than several databases on dozens of LAN servers."

HealthCare Compare has two lines of business and two main databases. Case management includes functions such as certifying hospital stays, and it uses applications and data stored on PC servers. Preferred-provider services use a database of providers with whom HealthCare Compare has negotiated lower fees on behalf of its clients. These applications and the database are stored on a Unix host from Pyramid Technology Corp.

The company uses Novell's LAN Workplace product to load both IPX/SPX and Transmission Control Protocol/Internet Protocol (TCP/IP) stacks on client PCs. Users thus have access to LAN servers and the Unix host without rebooting.

The company is currently integrating its two lines of business into a complete "managed care" service. To do this, both of its databases during the next year will be tied together and stored on a cluster of DEC VAX 7000s to be accessed from desktops via TCP/IP and LAN servers. Productivity applications, such as spreadsheets, will remain on the LAN servers.

Triple focus

HealthCare Compare's information systems staff's efforts are focused on three key areas: maintaining the reliability and manageability of the LANs, moving its corporate databases over to VAXs and writing client/server applications to access both LAN and VAX servers.

Currently, 46 PC LAN servers and more than 1,400 nodes spread over several sites are managed by only seven LAN administrators and one LAN supervisor. In the last two years, the company has experienced fewer than 10 minutes of network downtime. "The keys to a stable LAN environment are centralized management and redundant components," said Ronald Boeving, assistant vice president of IS.

Boeving cited several key factors in his decision to build a centralized, minicomputer-based data center. First, he said he felt his data

HealthCare, *page 68*

ON SITE

HealthCare Compare
Downers Grove, Ill.

Challenge: To integrate case management and preferred-provider networks into one service.

Strategy: To move PC server-based case management database and Unix-based, preferred-provider database to large databases on VAX minicomputers.

Expectations: To improve data access and security while retaining flexible PC LAN interface.

HealthCare Compare's *Ron Boeving (left), Janet Gawrys and Kent Campbell moved up to VAXs when their firm almost quadrupled*

VAXs as servers

CONTINUED FROM PAGE 67

was more secure in a single, central site. Second, he said he felt minicomputer technology, especially its I/O capabilities and storage capacity, was better suited to handle his 120G bytes of data than PC servers.

Both the case review and preferred-provider databases will be moved into a relational database from The ASK Group, Inc.'s Ingres Products Division running on the VAXcluster. The data will be accessed from Microsoft Corp.'s Windows on desktop PCs via the LAN.

HealthCare Compare is currently using a variety of tools, including Microsoft's Visual Basic and Ingres' Windows for 4GL to build client/server applications that will run against the database.

The custom-built applications will use Ingres' stored procedures capability, which allows triggers and business rules stored on the server to be automatically invoked to minimize network traffic. "Stored procedures let you make one call over TCP/IP instead of seven or eight," Boeving said.

Boeving stresses usability in his new applications. "The LANs established a high level of usability and reliability, which we want to keep," he said. "The human interface and responsiveness of the LAN are par excellence; it just lacks the data access and storage technology of the minicomputers. By combining the two technologies, we hope to get the best of both worlds."

Redundancy pays

HealthCare Compare IS executives attribute their remarkable network uptime to carefully planned redundant components.

"We have mirrored backup servers so that if a production server goes out, we can bring up a backup server immediately, and no more than 10 minutes of work will be lost," said Ronald Boeving, assistant vice president of IS. In the company's LANs, every transaction is written first to an intermediate server, which then duplicates the transaction to the production and backup servers.

To simplify configuration and management, the company has adopted standard desktop and server configurations.

Most of the company's desktop PCs are 486-based, with 8M bytes of random-access memory and Microsoft's Windows as the front end. All corporate servers are Compaq Computer Corp. 486/50 SystemPros.

—Michele Doetert

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Unisys

CONTINUED FROM PAGE 67

vice president and corporate secretary at Concord General Mutual Insurance Co. in Concord, N.H.

On the plus side, Hofling, whose company uses two Unisys A series mainframes connected to 400 CTOS workstations, said he is pleased with the vendor's willingness to allow the proprietary CTOS workstations to run on different operating environments, particularly MS-DOS, which is popular among Concord's insurance agents.

But Hofling said he is miffed over the escalating maintenance costs for his firm's A-6 and A-10 mainframes. Concord's A series maintenance costs have jumped 50% during the past three years.

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In Brief

Parallel purchase

MasPar Computer Corp. last week said that **Lawrence Berkeley Laboratory** in Berkeley, Calif., purchased a MasPar massively parallel processing system to support imaging applications related to materials sciences, earth sciences, molecular biology and physics.

Tool goes beyond Oracle

Business Objects, Inc. said the latest release of its $800 BusinessObjects front-end data access tool has been extended to reach more relational databases. The 2-year-old product had previously supported only **Oracle Corp.** databases. Through separate gateways, Version 2.2 can now link with databases from **Sybase, Inc., Informix Software, Inc.** and **The ASK Group, Inc.'s Ingres Products Division; IBM's DB2; and Digital Equipment Corp.'s Rdb.** Version 2.2 is being shipped to users.

SAP AG to port to Windows

SAP AG has announced plans to port its suite of client/server applications to **Microsoft Corp.'s Windows NT.** The first results of the porting are expected to be displayed at the CeBIT trade show, which will be held next March in Hannover, Germany.

Mapics family to grow

Marcam Corp. unveiled what it is billing as the "next generation" of Mapics applications at its user conference last week. Mapics, which Marcam purchased from IBM, is a family of manufacturing applications. Included in the announcements were nine applications, a user interface and a pledge to continue expanding the Mapics family.

A change of force

Oracle USA President Ray Lane said Oracle will direct its thousands-strong direct sales force to work closely with indirect distributors. Oracle is reorganizing its entire sales force nationwide, giving sales representatives bigger quotas that cannot be met without large-volume indirect sales.

Control Data enhances data management

Control Data Systems, Inc. in Arden Hills, Minn., which spun off last year from the former Control Data Corp., last week enhanced an engineering package designed to speed concurrent engineering processes.

The data management software product, EDL 6.0, was intended to provide varied views of product data to users in multiple workgroups. Using the software's Networked Object Manager and relational database management system, product definition data can be created, located and distributed through a graphical user interface (GUI).

By tracking the relationships of design objects, EDL 6.0 reportedly helps ensure product design integrity for small work teams or for an entire enterprise.

EDL 6.0 is the successor to EDL 5.7 and adds GUI-based browsing capabilities as the key new feature. It includes as major modules the EDL Networked Object Manager, EDL Product Structure Manager, EDL Process Manager and Personal PDM module. It also adds client support for Microsoft Corp.'s Windows; EDL 5.7 supported only Apple Computer, Inc. Macintosh clients.

Available for platforms from Control Data Systems, Sun Microsystems, Inc., Hewlett-Packard Co., IBM, Silicon Graphics, Inc. and other Unix vendors, EDL 6.0 is priced starting at $2,000 per concurrent user.

Control Data Systems also enhanced its computer-aided design, manufacturing and engineering products by adding new modules to its ICEM CFD/CAE grid generation software and introducing a solids modeling system. ICEM Parametric Solids is the result of a joint marketing and technology agreement with Intergraph Corp.

—James M. Connolly

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Unix conversion serves up mixed brew

By Mark Halper
LACROSSE, WIS

G. Heileman Brewing Co.'s wish list for its Unix operations just got a little shorter, if vendor promises count.

The company recently put the finishing touches on a three-year conversion of all operations from IBM and Unisys Corp. mainframes to three Pyramid Technology Corp. servers, and while it has been pleased with the results, the system has had its shortcomings.

For instance, Paul Ricker, Heileman's vice president of information systems, noted that the $1 billion brewing company has had to cobble together its own systems management software, which is now a patchwork of programs that do not communicate with one another.

Help on the way

But Pyramid has a plan to smooth things out. Next month, the multiuser computer vendor plans to introduce a graphical user interface-based administration environment that will provide end users with a consistent window to their disparate tools.

The Motif-based product, called Visual Systems Manager II (VSM), will include a rules manager, icons and point-and-click features that should enable Heileman to lower costs by reducing systems management manpower and improving efficiencies, Ricker said.

If Pyramid gets around to shipping it, that is. Ricker said he had expected the product to be available by now. Pyramid previewed it last March and now says availability looks like it is a few months out.

In the meantime, Ricker is considering other options, such as CA Unicenter, a comparable product from Computer Associates International, Inc. that CA is in the process of porting to Pyramid.

"We've been really crying out for this," Ricker said. "We've had a lot of homegrown tools for things like capacity management, tape management and distribution management. They all work separately."

However, whichever product Heileman chooses will not be the final answer to its systems management needs. The company is searching for a job scheduler and disk management tools to minimize I/O bottlenecks, for instance.

Heileman Brewing's Paul Ricker: *Some IS staff members were die-hard IBM users*

VSM will be the latest twist in Heileman's $7 million mainframe migration, begun in 1989, which Ricker said has helped lower the company's IS budget by $3.7 million, although he declined to reveal the total budget figure.

Heileman's switch to Unix resulted from an edict by its former parent, the now-defunct Bond Corp.

At the time, Bond owned companies around the world in brewing, real estate, mining, media and petroleum. Bond decided Unix systems would facilitate open communications among the various far-flung properties.

Heileman's migration of some 6,000 programs it had built during 20 years of mainframe computing has proceeded at a deliberate pace with the help of a slew of contract programmers including Minneapolis-based Software Solutions Corp., and with the installation of several off-the-shelf software programs. The company just last month pulled the plug on its last mainframe, a Unisys A12.

ON SITE

G. Heileman Brewing Co.
LaCrosse, Wis.

Challenge: To efficiently manage new systems after converting from IBM and Unisys mainframes to Pyramid Unix systems.

Plan: To replace a homegrown, limited-function management system with a GUI-based program, either Pyramid's upcoming Visual System Manager II or Computer Associates' CA-Unicenter systems management package.

Among the benefits afforded by the Unix system have been system speed and flexibility. Ricker noted that under the mainframe's old Cobol financial system, "we couldn't introduce a new account into the general ledger without a week of programming."

Running Oracle Corp. financial programs, the brewery has decreased that time dramatically, he said.

Return to solvency

In fact, Ricker claimed the Unix system played a role in expediting Heileman's passage through Chapter 11 bankruptcy proceedings because the old mainframes were clumsy at tracking debtors.

"We couldn't have come out as quickly with a proprietary system," Ricker said.

It has not all gone smoothly, however.

"I probably would have waited a little longer until there were more conversion tools available," Ricker said, reflecting on what he might do differently a second time around.

Not all quarters of the company received the idea of Unix graciously, Ricker said.

"The biggest challenge was with the IS staff itself. You have a lot of die-hard IBM users who hadn't even heard of Pyramid."

The switch involved long hours of intensive training for the IS staff, which Heileman cut from about 85 to 70.

Ricker recounted another obstacle he faced during the conversion: It was difficult "keeping IBM management away from [Heileman] management to keep them from telling us that we were making a mistake," he quipped.

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IBM Posix-compliant MVS

CONTINUED FROM PAGE 67

software, including MVS 4.3 and DB2 3.1.

When IBM delivers the parallel processing computer, it will do so as an integrated set of hardware, software and services, Harrison added. "We'll provide customization and planning, install and verify, maintenance and anything else you want to pay us to do," he said.

Users will be able to move their MVS applications to Posix platforms

After the DB2 engine is delivered, Harrison said, IBM will make one available for transaction processing using CICS and DL1 by the middle of next year.

Also, IBM will make available a tool to help users parallelize their batch programs to allow these applications to take advantage of the full horsepower of the new machines. This will likely be available later this year, he said.

Harrison said the Posix interface has been delivered to a government sector user and that it will be the basis for IBM's implementation of the Open Software Foundation's Distributed Computing Environment. "MVS isn't going to be Unix any time soon, but we are moving quickly to open it up," he said.

The Posix interface will be certified by X/Open Co. and will conform to the standard, he said, but it will do so in a way that takes the "things that are good about MVS." For example, system performance data will be in the standard MVS format, as will the hierarchical file system.

Harrison said users will be able to take their MVS applications and move them to Posix platforms.

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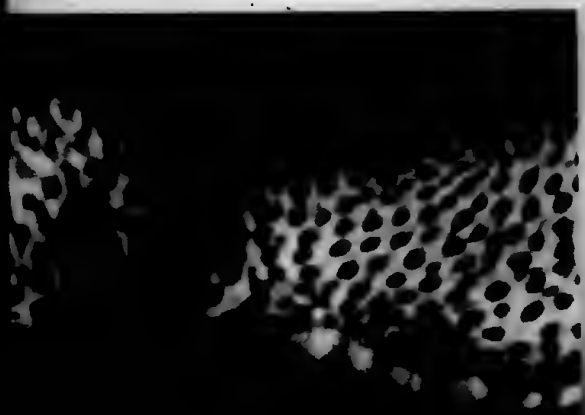

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Database management

Aston Brooke has released DB-Visioo for Oracle.The product is a set of tools designed for monitoring and tuning Oracle Corp.'s relational database management system.

The product continuously monitors Oracle database operations and stores detailed performance information in a compressed history database.

More than 50 performance measures can be seen historically or in real time because of a Motif-based graphic interface. Conflicts are automatically predicted, logged, detected and corrected.

Prices start at $800.

▶*Aston Brooke*
Suite 300
Plymouth Meeting Executive Campus
610 West Germantown Pike
Plymouth Meeting, Pa. 19462
(215) 834-3960

Platinum Technology, Inc. has expanded support for the IBM Query Management Facility (QMF) by adding more products and features to its line of products for QMF.

Platinum Object Administrator is a tool that enables users to manage QMF queries, procedures and forms. The product works seamlessly with Platinum Compile/QQF and Platinom Governor Facility. QMF queries and reports can be transported into productioo with the Platinum Compile/QQF.

By using an interactive meno-driveo interface, users can convert a QMF query into a Cobol program. According to the company, Platinum Governor Facility monitors the resources and commands used during a query session.

Object Administrator prices range from $7,084 to $28,860. Compile/QQF prices range from $10,120 to $41,228, and the prices for Governor Facility range from $19,250 to $82,455.

▶*Platinum Technology*
1815 S. Meyers Road
Oakbrook Terrace, Ill. 60181
(708) 620-5000

Software application packages

Sterling Software, Inc.'s Systems Software Marketing Divisioo has introduced Sterling Shrink for IMS 5.2.1, a product designed to provide data compressioo and expansioo facilities for Versioo 4.1 of IBM's IMS.

Without application program modification, the product can operate under OS/VS2, MVS or the Single Virtual Storage System. Shrink for IMS can also be used for variable and fixed-length methods.

Depending on the data and the compressioo rootine used, Shrink for IMS can be applied to full-functioo databases, achieving data compression of up to 50%. Applied to Fast Path Data Entry databases, compression of up to 80% can be attained, the company said.

Prices begin at $14,500 for Group 30 processors.

▶*Sterling Software*
11050 White Rock Road No. 100
Rancho Cordova, Calif. 95670
(916) 635-5535

Power supplies

Exide Electronics Group, Inc. has introduced two Powerware Personal Uninterruptible Power Systems.

The products were designed for applications that include standby PCs, servers and client terminals, local-area networks, telecommunication devices and point-of-sale equipment.

The Powerware Persoonal Models 400 and 600 offer 400 VA and 600 VA power ratings, respectively, and feature aotomatic bypass and increased battery backup. The products are also furnished with LAN or serial communication options.

Prices start at $449.

▶*Exide Electronics*
8521 Six Forks Road
Raleigh, N.C. 27615
(919) 872-3020

Upsonic has announced the VR Series of uninterruptible power supply (UPS) systems for PC-based local-area networks.

The company said the VR Series protects host computers, LANs and file servers from suspect input power sources. The products include voltage regulation in addition to battery backup features and standard UPS surge protection.

Battery service, replace and overload warning lights are included. The Upsonic VR Series is available in four models ranging from 550 VA to 2,000 VA.

Prices range from $279 to $949.

▶*Upsonic*
1392 Industrial Drive
Tustin, Calif. 92680
(714) 258-0808

International Power Machines Corp. has introdoced the Series 100 UPS, a single-phase uninterruptible power supply (UPS) system designed to protect PCs and local-area networks.

The Series 100 UPS has a microprocessor-based architecture that protects critical equipment and includes Power Management Software for control of individual computer or networkwide power, the company reported.

The series includes a power design that supports switch mode power supplies and offers spike and surge protection.

The Series 100 UPS is available in 300, 450, 600, 800 and 1,200 VA ratings.

Prices range from $400 to $2,000.

▶*International Power Machines*
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(214) 272-8000

Computer Power, Inc. has introduced Computersave, an on-line uninterruptible power system.

Becaose the product offers voltage regulatioo and power conditioning, a critical load can be protected continuously and prevent even a brief power outage, the company reported.

The latest advancements in pulse width modulation and line interactive ferroresonant technology are provided, and Compotersave has the ability to correct damaging harmonics.

Prices start at $1,319.

▶*Computer Power*
124 West Main St.
High Bridge, N.J. 08829
(908) 638-3000

Utilities

Kisco Information Systems has introduced Smarttn, a desktop utility program designed for IBM Application System/400 users.

Smarttn consists of an AS/400 command line, a 200-year calendar, a personal telephone list, a personal notepad and a full-function adding machine. According to the company, when users are working with the AS/400 Attention Key processsing, all utilities are instantly available by pressing the ATTN key.

The base price for Smarttn is $500.

▶*Kisco Information Systems*
Suite 124
120 Beverly St.
Mount Kisco, N.Y. 10549
(914) 241-7233

BMC Software, Inc. has announced Q:Manager IMS.

According to the company, the product increases IBM's IMS/TM availability by enabling IMS data centers to bypass ontages or reduce the impact of an ontage by offering several exclusive capabilities for the daily or emergency management of IMS message queues.

Users can dequeue (delete) or unload problem system or transaction messages. Q:Manager IMS has the ability to lessen the impact of a scheduled or unscheduled ontage by allowing IMS users to quickly requeue lost messages.

The need to manually search through systems logs and on-line data sets when recovering lost messages has been eliminated because Database Recovery Control is used and Q:Manager IMS automatically selects the approriate checkpoints.

CPU level prices start at $15,500.

▶*BMC Software*
1 Sugar Creek Center Blvd.
Sugar Land, Texas 77487
(713) 240-8800

Software Engineering of America has introduced Release 2.0 of FASTVSAM, a high-speed copy facility designed for VSAM users and sequential data sets.

According to the company, it replaces the Repro function of IDCAMS and has a sophisticated VSAM cluster Backup and Restore capability.

Offering both file and catalog management, FASTVSAM Version 2.0 acts as a front end for IDCAMS.

The product runs in any MVS, MVS/ESA or MVS/XA environmeot.

Prices range from $7,000 to $12,500.

▶*Software Engineering of America*
1230 Hempstead Tnpk.
Franklin Square, N.Y. 11010
(516) 328-7000

Now the World's Leading Mainframe C Compiler Features Some Significant Pluses

Introducing the SAS/C C++ Development System from SAS Institute. Another first from the first name in C programming tools for the IBM mainframe environment.

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C++ is an object-oriented superset of the C programming language that makes program development, use, and maintenance easier and more efficient. Now with the SAS/C C++ Development System, you can open the door to object-oriented programming on your IBM mainframes under MVS (batch and TSO) and VM/CMS while preserving your existing investment in C applications.

The SAS/C C++ Development System is fully compatible with the AT&T 3.0 release of the C++ language with the exception of template support. It implements the familiar constructs of the C++ programming language—including in-line functions, operator and function overloading, references, and free store management—providing a robust and productive applications development environment.

The enhanced SAS/C Full Screen Debugger, available with the SAS/C compiler, also supports C++, allowing you to debug C++ as well as mixed C and C++ applications.

A Plus for Portability

The SAS/C C++ Development System is an indispensable tool for migrating existing C++ applications developed in other environments. Applications built on UNIX workstations and PCs can be ported to the mainframe with minimal effort. As a result, your workstation becomes an effective platform for mainframe applications development.

Find Out More In A Free Report

To learn more about the pluses of C++ programming with the SAS/C C++ Development System, simply call or fax us today.

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California goes after insurance cheaters

Relational database, forms-based applications give state department timely notice of past fraud

By Jean S. Bozman
SACRAMENTO, CALIF

California, a large state often rocked by earthquakes and seared by extensive brush fires, deals with a lot of insurance companies. But until recently, it had no consistent way to flag repeat cases of insurance fraud.

The state has created an early-warning system that searches an integrated relational database for companies and individuals that have been associated with past infractions.

Collecting information for the new database was not a problem, said Ron Kuhnel, chief at the California Department of Insurance's technology division.

Financial data on all insurance companies operating in the U.S. — some 5,000 companies — arrives quarterly on magnetic tape from the National Association of Insurance Commissioners in Kansas City, Mo. Approximately 1,500 insurance companies operate in California.

Other data points come from 50,000 calls to a consumer-complaint hot line each month and from data that is informally gathered by the insurance agency's 1,000 employees.

Accuracy was a top concern of information systems managers, who said they worried about islands of information in mainframes and PCs scattered in several sites from San Francisco to Los Angeles. Worse, because some vital data was stored on paper or index cards, it could not be shared throughout the agency.

ON SITE

California Department of Insurance
Sacramento, Calif.

Software: Oracle Version 6.0 database with 500M bytes of data. Five applications, built with Oracle Forms, use the database; a dozen will exist by mid-1994.

Hardware: Digital Equipment Corp. 5900 RISC machine under Ultrix.

Cost: $1 million, about one-fifth the cost of a similar mainframe system.

Fortunate move

Then, in 1991, the state took over operations for two multibillion-dollar insurance firms that were heading for insolvency. A 1991 directive from Insurance Commissioner John Garamendi spurred development of the early-warning system and its associated integrated database management system.

To get the development job done quickly, California turned to systems integrator Suncoast Scientific, Inc. in Fort Walton Beach, Fla., paying the firm about $1 million. Suncoast, with just 30 employees, had built similar insurance applications for the state of Florida.

Suncoast worked with state programmers to build applications that access the same sets of underlying data. "We wrote cross-functional systems," Kuhnel said. "The idea is to link every event together relationally."

Suncoast programmers, working in Florida and Sacramento, wrote 300 Oracle SQLForms 2.3 on-screen report forms because they had experience with the Oracle Corp. program. That may have been a "tactical" mistake, Kuhnel said, because all of those character-based forms had to be upgraded, one by one, to SQLForms 3.0.

Ron Kuhnel: *'The idea is to link every event together relationally'*

The insurance agency plans to start developing new applications with the graphical user interface-based SQLForms 4.0 tool this summer.

California, *page 83*

SQL features aid programming

By Garry Ray

Database programming received a boost last week when two development tools vendors added SQL programming facilities to their current offerings.

Kaseworks, Inc. in Norcross, Ga., announced SQL support for its Kase:VIP code generation tools for IBM's OS/2 and Microsoft Corp.'s Windows.

The enhancement, to be delivered this summer in the Kase:VIP development products, includes a visual SQL Designer for prototyping and testing database applications, according to company officials.

The SQL Designer will initially support databases such as IBM's OS/2 Database Manager, Sybase, Inc.'s Sybase, Microsoft's SQL Server and other SQL databases.

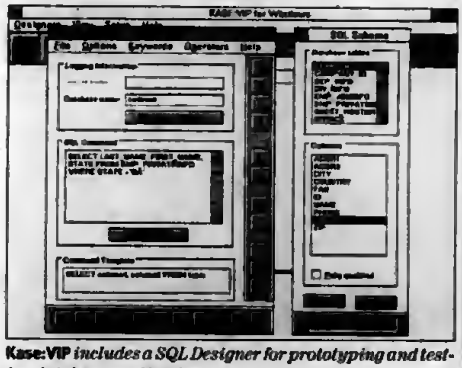
Kase:VIP offerings for Windows and OS/2 currently include tools for designing windows, menus, panels and other application components. The tool generates C, C++ or Cobol source code, company officials said.

Kase:VIP users said SQL Designer will offer them an alternative to other client/server development tools that use proprietary fourth-generation languages (4GL). "The bottom line is that you can't do mission-critical apps using 4GLs," said Louis Kahans, senior systems analyst at The Centers for Disease Control and Prevention's National Center for Prevention Services in Atlanta. "If there are bugs [in the 4GL code], you have to wait for the vendor to fix them."

Pricing for the Windows and OS/2 versions of the Kase:VIP tools will be $1,995 and $3,995, respectively, according to company officials.

Separately, Blue Sky Software Corp. in La Jolla, Calif., began previewing its Visual SQL prototyping, design and code generation tool for Windows.

According to the company, programmers can use Visual SQL to develop working Windows applications with menus, graphics, data-entry screens and electronic Help systems. These prototype applications can then be used to generate C code for subsequent compilation. A "preview mode" allows developers to test the application prior to compilation, the company said.



Kase:VIP *includes a SQL Designer for prototyping and testing database applications*

Slated for release in the third quarter, Visual SQL will support Oracle Corp.'s Oracle, Sybase's SQL Server, Borland International, Inc.'s dBase and Microsoft's Open Database Connectivity interface, company officials said.

Micro Focus offers choice in transaction processing

By Garry Ray

One path on the long march toward application rightsizing may be cleared with this week's slated announcement of a new transaction processing system from Micro Focus, Inc. in Palo Alto, Calif.

Called the Micro Focus Transaction System (MTS) and scheduled for release next month, the facility will offer an alternative to IBM's AIX CICS/6000 transaction processing system for the RISC System/6000. Currently more than 36,000 CICS licenses are in use on a variety of IBM mainframe platforms, according to an IBM spokesperson.

MTS will enable migration of mainframe-based CICS applications by providing a CICS-compatible application programming interface on AIX, Unix, OS/2 and Microsoft Corp.'s Windows NT platforms, Micro Focus officials said. Such a design allows CICS applications developed for mainframe execution to be ported to other platforms and run without alteration, according to beta-test users.

A purchasing system created for use in an MVS environment on the IBM Enterprise System/9000 ran on an Intel Corp. 1486-based system "with no modification at all," said Steve Kaplan, manager of software services at Micro Focus.

Micro Focus, *page 84*

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INFORMATION

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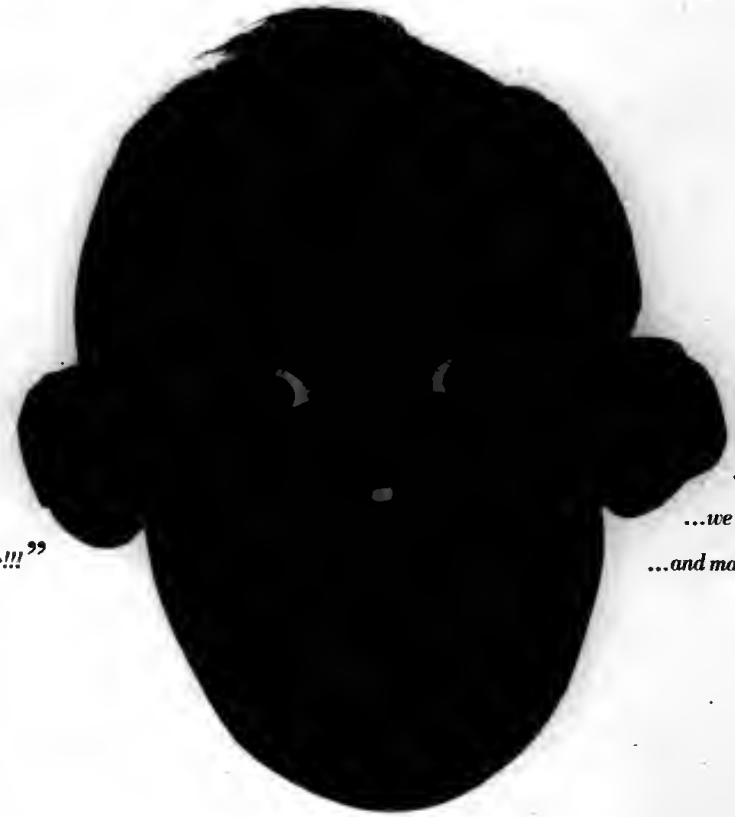

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California receives early warning

CONTINUED FROM PAGE 79

The early-warning system went into production in February. At its core is an integrated Oracle Version 6.0 relational database that holds all insurance agency data.

Several other key application systems feed on the central, integrated Oracle database. Among these are systems for tracking cases, companies and people.

The integrated system can support about 150 concurrent users on the current Unix server; if the system moves to a bigger machine, it could support many more users.

Goodbye to the mainframe

The application development work for all the integrated database applications went quickly, with the core database and several applications done by June 1992.

By August 1994, about a dozen applications will be in production, Kuhnel said, leaving few applications on an IBM-compatible mainframe and a Software AG of North America, Inc. Adabas database.

He estimated doing the same work on a mainframe would have required $5 million to $10 million — and several years.

Construction of the database was hampered by the fact that departments throughout the state agency maintained extensive but redundant records.

Steve Carter, Suncoast's vice president, said part of his firm's job was to pare down the data before adding it to the integrated database. Original estimates of the integrated database size ran to about 30G bytes; the streamlined database in production is just 500M bytes now, but Kuhnel said he expects it to grow to several gigabytes within a year. Current plans call for archiving data after five years on-line to optimize system performance.

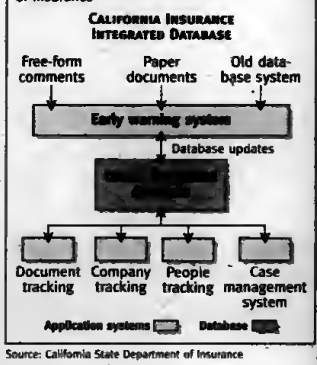
One unique aspect of the early-warning system is a "field" in which users can enter free-form comments to the central database. Any of the 800 agency employees who use PCs can record tips or rumors that may bring attention to a failing or fraudulent insurance firm, leading to proactive follow-up. Because the central database stores business "rules," cases are handled in a consistent fashion.

With [illegible] any of the [illegible] who use [illegible] rumors that may [illegible] to a failing [illegible] insurance firm, leading to proactive follow-up

"There's a whole business process wrapped around this, and the computer enforces it," Kuhnel said.

Core component

An Oracle database provides the link between management applications and varied data sources at the California State Department of Insurance



Source: California State Department of Insurance

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Micro Focus offers choice

CONTINUED FROM PAGE 79

Financial Systems Associates, Inc., a contract programming firm in McLean, Va. Kaplan, who noted that MTS can also "run with existing mainframe applications," said the product could prove attractive to companies wanting additional mainframe capacity. "If you can move part of an existing mainframe application down to a local-area network, you're effectively increasing capacity on the mainframe."

At Tulane University in New Orleans, Mary Lesher, associate director of administrative computing, said MTS will aid in the effort to "get out from under the mainframe." The university, which has "several hundred CICS users," according to Lesher, has been testing MTS since March.

A top priority at Tulane is to "protect the investment" made in CICS application programming by providing workstation-based applications that appear identical to those currently running on 3270 terminals. Lesher said MTS will allow the university to port CICS source code to workstations and to "keep the system looking exactly the way it now is." That will make it easier for users to make the transition from terminals to workstations, she said.

More than what's apparent

But analyst Ed Acly said there is more to MTS than immediately meets the eye. Acly, director of software research at consultancy Technology Investment Strategies Corp. in Framingham, Mass., said, "This is not just a CICS announcement." MTS "actually is an open transaction processing monitor" with a CICS interface and over time could be enhanced by Micro Focus to support other transaction processing models, he said.

"As it matures, MTS could support CICS or Transarc's Encina or whatever is needed," Acly said.

Most important is that MTS will immediately let Cobol-based CICS shops make an entrance into client/server computing, Acly said. Because it allows CICS code to be ported to a wide variety of servers and supports client machines running MS-DOS, Unix, Windows, Windows NT and OS/2, MTS "will allow legacy systems to evolve more naturally into client/server computing," Acly said.

Versions of MTS for The Santa Cruz Operation's SCO Unix and IBM's AIX RS/6000 will be available this month, with other platforms supported "shortly thereafter," Micro Focus officials said. Pricing was unavailable at press time.

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Born Software Development Group has announced Guide/400, a C language application.

Guide/400 offers record-level access and management of data files residing on an IBM System/36 or Application System/400, the company said.

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[illegible]	8.8	8.9	8.4	8.1	8.7	7.4
[illegible]	8.1	8.8	8.8	8.2	8.7	7.6
User Friendliness	8.8	7.7	8.3	8.1	7.5	7.9
OS Compatibility	8.8	8.4	8.8	8.8	8.3	7.5
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Problem Response Time	8.8	7.5	7.2	8.8	8.4	8.2
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	[illegible]	[illegible]	INFORMIX	INGRES
PRODUCT FEATURES				
Size of use	[illegible]	[illegible]	8.80	8.00
Memory requirement	7.88	6.80	6.14	5.11
Ease of programming	8.67	6.74	6.79	6.37
Ability to manipulate data	[illegible]	7.84	7.14	7.07
Sorting capabilities	8.88	7.84	7.21	7.58
Provision for software security	8.00	8.00	7.80	6.70
Report writing capabilities	7.84	6.54	6.58	6.00
Ease of use of interface	8.10	6.80	6.86	6.80
Software integration capabilities	8.00	6.32	7.20	6.16
Ease of data retrieval	8.00	7.25	7.66	7.84
Satisfaction with product profitability	7.88	6.61	6.79	6.19
Overall quality of product	8.87	6.87	7.36	6.71
PRODUCT FEATURES AVERAGE	8.32	6.82	6.96	6.41
SUPPORT FEATURES				
Provision for customer support	8.30	6.72	6.10	5.44
Charges for training time	8.91	6.79	5.56	4.71
Provision for technical support	7.57	6.14	6.00	6.15
Provision for marketing support	7.04	5.97	5.33	4.04
Documentation & product information	8.02	7.00	6.57	6.00
Frequency of updates & revisions	7.75	6.28	6.06	5.74
SUPPORT FEATURES AVERAGE	7.99	6.32	5.93	5.16
OVERALL AVERAGE	8.11	6.86	6.62	6.00

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Value-revisionists

Growth-minded VARs are reinventing themselves in many ways. They could soon be knocking at YOUR door.

By Willie Schatz and Joseph Maglitta

When his company's hotel computer system died from information overload, MIS manager Gary Gartee's heart went straight into his mouth. "I put my life on the line. I was petrified," says Gartee, who manages 1,400 users on a system supplied by a value-added reseller (VAR).

The MAI Basic Four, Inc.-based system serves 10 Southern California hotels owned by Gartee's employer, Oxnard, Calif.-based Martin V. Smith and Associates.

Cap Schwartz, a database administrator at Telebit Corp. in Sunnyvale, Calif., recalls the time when a technical problem in a VAR system crippled an entire telemarketing group.

Harvey Soren, data processing systems manager at Guimarra Vineyards Corp. in Bakersfield, Calif., was in the middle of putting together a large, important deal when the VAR he was working with went out of business. "We got stuck," he says.

Admittedly, these are nightmare tales that don't do justice to the hundreds and thousands of hardware and software resellers that supply ready-to-go systems and packages to satisfied organizations large and small.

But they also embody the worst fears of many information systems executives: that VARs are unstable, undependable specialty suppliers that will never make much of a difference to mainstream computing.

However, if VARs and their high-powered partners, including Microsoft Corp., Lotus Development Corp. and others, have anything to say about it, the image of small product-push-

Value-added, *page 90*

Alan Levenson

▲ **Martin V. Smith and Associates' Gary Gartee** *likes his current value-added reseller, but he may soon have to beat hopeful competitors off with a stick*

How To Get Mo
Work Force When 10

**Beyond productivity: a major insurance company, once a corparate work-at-home pioneer, today uses "telecommuting" as a perk to attract and retain superior workers.*
***That's right–"Ameritech" and "competitive prices" in the same paragraph. It's not just the technology that's innovative.*

re Out Of Your
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Productivity goes through the roof: Data from traffic-snarled Los Angeles' city-mandated work-at-home programs show most companies report an average increase in productivity of 20 to 30%. But many indicate increases of up to 100%

If your company is looking at a corporate work-at-home program–in response to green legislation or perhaps to tap into a new labor market–you may be on the verge of an important discovery: such programs, done well, can pay dividends in productivity. Not hard to figure; people who work at home *like* it.* And they do more work.

But there's a lot more to making work-at-home work than blocking off some of your parking places and telling the lucky 10% to leave the car in the garage and buy modems.

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Value-added

CONTINUED FROM PAGE 87

ers will soon change drastically.

Squeezed by shrinking profit margins and more competition from indirect modes of distribution and computer superstores, both large and small VARs are scrambling to survive and thrive by diversifying and reinventing themselves.

Many VARs are working to evolve into a host of new business areas, notably groupware, electronic mail, systems integration, workstations, open systems, local-area networks, office automation and client/server systems, apparently with some success.

According to a report by Market Intelligence, a Mountain View, Calif., research firm, VARs and systems integrators represent the second-fastest growing sales channel for microcomputers (behind distributors), commanding a 41% market share, predicted to reach 52% by 1998. Portable computers are a particularly hot seller as well.

Analysts say growing interest in multivendor systems, coupled with closer VAR alliances with computer products vendors, is driving this growth. In recent months, many major hardware and software makers have announced plans that appear to make VARs a more important link in their distribution strategies (see story at right).

Some VARs are also moving to expand beyond their traditional emphasis on vertical markets, such as government, banking, finance and libraries, and instead focusing on horizontal markets, specific software applications and geographic customers.

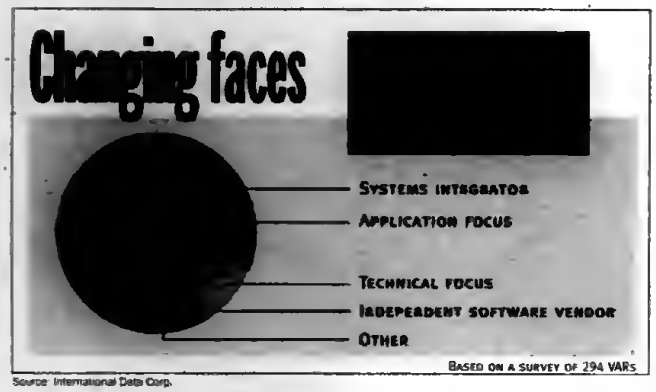
"Our value-added has become much more customer-oriented," says John Iaccarino, chief financial officer at RealTime Consultants in Saddle River, N.J. "The ability to make things work gives you a competitive advantage. People are buying our time now."

Problems at the fore

According to analysts and VARs, the average IS manager has a far greater chance of encountering a VAR now than in the past.

A recent survey by International Data Group and intelliquest found that 27% of the nearly 500 corporations planned to increase their use of VARs this year.

Lee Levitt, an analyst at Framingham, Mass.-based International Data Corp., says VARs are beefing up staffs in preparation for moving beyond their traditional base in hopes of attracting medium and large customers. Over the last year, for instance, RealTime Consultants, which employs 20, says it has doubled its sales and support staff.



Source: International Data Corp.

According to Merrin Information Systems, Inc. in Palo Alto, Calif., VAR sales hit more than $7 billion last year — about 15% of all computer revenue. Many VARs had record earnings.

Such aggressive movement by VARs eager to sell an expanded array of services to corporations will undoubtedly raise new questions for IS managers, many of whom may never have dealt with resellers before.

If Gartee's early experiences are any measure, the new role could be promising. When his firm switched to an IBM RISC System/6000, he decided to stick with Computerized Logic Systems (CLS), a Long Beach, Calif.-based VAR that calls itself the world's largest supplier of hospitality systems.

Although CLS had never run on an RS/6000, it decided to give it a shot for Gartee's company, with whom CLS had worked for eight years, according to Gartee. Fortunately, Gartee says, things worked out just fine.

"I really do rely on my VARs to keep informed about what's going on in the industry," Gartee says. "I think every IS manager should do that." He adds that it makes sense to use VARs as consultants, with their wealth of industry-specific and technical knowledge.

"I can't get out to every technology conference and see what products every vendor has," Gartee says. "But VARs can do that. I also rely on them to keep prices reasonable."

Using VARs as informal consultants has also paid off for Tracy Stevens, who manages an imaging hot line at Rochester, N.Y.-based Eastman Kodak Co.

"VARs are becoming increasingly important to IS folks as resources for additional information about software, hardware, industry trends and even market research," Stevens says. "We're finding that we're being spread thinner and thinner through cutbacks and redactions in force. Using VARs enables us to get knowledge we otherwise would have gotten internally but we can't get because we no longer have the resources."

Healthy skepticism

Still, many IS directors are likely to need more than a little persuading to accept VARs in a new role.

Typical is Janet Mace, data processing director for the city of Anaheim, Calif. Mace says she doubts that VARs can reinvent themselves overnight.

"After 20 years in this business, I am very skeptical that a company can quickly take on some special expertise," she says.

Mace recalls how she once employed a VAR at $150 an hour to help upgrade to Novell, Inc.'s NetWare v3.11. After spending 40 to 50 hours, she says, the VAR still could not iron out recurring printing problems. "They would just throw hardware and software at the problem."

Finally, an in-house staffer found the bugaboo: incompatibilities between an old print server and the new Novell operating system. "My [programmer] at $18 an hour solved the problem a lot cheaper than the 'expert' outsider," Mace says.

Jeff Newman, formerly the vice president of MIS at Barclay's Bank in New York and now president of CONFIG.SYSTEMS in New York, also has reservations. "I think VARs are between a rock and a hard place. They've got to compete on price, but they're never going to be the cheapest."

He continues, "VARs shouldn't try to sell themselves as systems integrators because the relationship is doomed to failure. More and more companies are going to their own integration teams because true integration . . . has to be handled in-house. That's more difficult than most VARs can handle."

Tips for the wise

If you decide to try one of the revamped VARs, experts say it's best to follow the usual commonsense guidelines that apply to other services.

Besides ensuring that the VAR has direct, relevant experience with your application, as well as quality products and adequate staffing, Levitt says it's smart to investigate the VAR's financial health.

"If they stock a lot of inventory and had a lot of accounts receivable," Guimarra Vineyards' Soren adds, "I would probably stay away from them."

Further down the road, some predict even further blurring between VARs and systems integrators. This, says David Coursey, editor of "PC Letter," an industry newsletter based in San Mateo, Calif., could make choosing a vendor even more confusing.

For their part, big systems integrators don't appear to be too worried about incursions into their territory, at least publicly. "I think if VARs and integrators collide at all, it will occur at the low end of the value chain," says Alan Stanford, national director for information technology services at Ernst & Young.

To make things easier for potential customers, Brad Bishop, chairman of Avcom Systems, Inc., a Sunnyvale, Calif., VAR, suggests a Better Business Bureau-type agency for resellers and consultants.

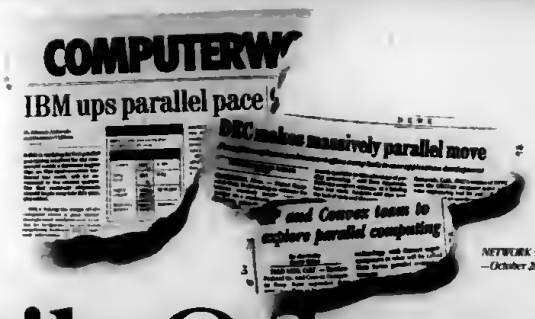
But until then, VARs have their work cut out for them if they hope to convince more than a few IS managers that what started in some cases as a horror show can have a happy ending. •

Schatz is president of The Schatz Group, a Washington, D.C.-based consultancy. Magitta is a senior editor, management.

VAR wars

Major hardware and software vendors are helping VARs rapidly become more important to IS managers. Recent moves to expand VAR use include the following:

- Lotus Development Corp. hopes an expansion of its current network of 200 authorized VARs will vault Notes ahead of competing products from Borland International, Inc. and Microsoft Corp. Revenue from the reseller channel reportedly grew 600% in 1992.
- Microsoft has also targeted VARs to broaden sales of Windows products, Windows NT, LAN Manager and SQL Server through its Microsoft Solutions Channel Program. It is also offering discounts to resellers.
- Novell decided to expand distribution plans for NetWare 4.0 to include top-level authorized resellers. The Provo, Utah, developer also designated Novell-authorized service centers to help resellers handle support.
- Apple Computer, Inc. embarked on a massive program in 1992 to sign up nearly 1,000 VARs, a figure expected to hit 2,500 by the end of 1993. The Cupertino, Calif., firm also opened up more than a dozen market centers for VARs across the country.
- IBM PC Co. is also actively recruiting VARs to sell its ThinkPad and Personal System/ValuePoint products.
- Compaq Computer Corp. has said it plans to double its VAR force. The effort will be led by distributors Merisel, Inc. and Tech Data Corp.
- Sun Microsystems, Inc. has reportedly begun shifting some workstation business from direct sales to VARs and systems integrators, including Electronic Data Systems Corp. and Andersen Consulting.
- Digital Equipment Corp. earlier this year said it planned to implement a new strategy that will bring VARs more closely into its product development and engineering process.



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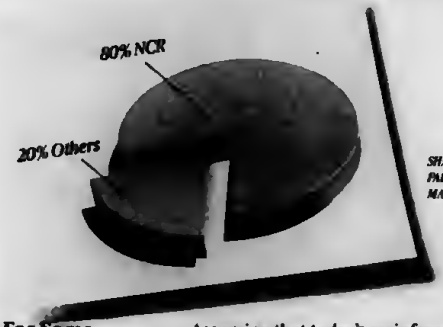
While Others Are Developing A Strategy, We've Developed A Following.



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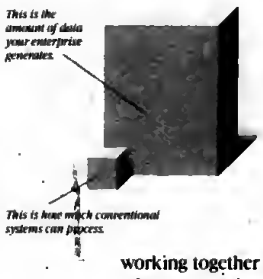

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Data centers: More work, better results

By Nell Margolis
BOSTON

Courtesy of consolidation, data center workloads are up, but technology is enabling slimmer data center staffs to cope with the added work.

Those were the major findings of Nolan, Norton & Co.'s 1993 "Data Center Baseline" report, released recently.

Based on year-to-year findings from the study, Nolan, Norton senior manager Tom Hickey predicted "improved total technology cost/performance" as technological innovation continues to drive down hardware prices and savvier management practices counter software cost hikes.

The report, issued late last month, showed an 8% decrease in data center staffing, particularly among operations support and technical services. However, the consultancy also found that an average 16% increase in pay-per-information systems employee offset initial gains, knocking the personnel spending decrease down to 2.5%.

Spurred in part by the increasing corporate cry to justify data center performance and IS directors' budgets, Nolan, Norton has been tracking, analyzing and updating deviations from a 1981 baseline at hundreds of large companies and publishing the resulting benchmark on an annual basis.

The baseline consists of a set of metrics that gauge data center productivity and efficiency in mainframe IS shops.

Survey trends

- 5% average decrease in overall spending due to decreasing hardware costs.
- 7.5% decrease in overall technology spending.
- 67% median work load increase, largely a result of the consolidation of data center operations.

At least one IS chief was skeptical of the study's findings. "You can make numbers say almost anything," said John Lui, IS vice president at Berol Corp. in Nashville. "You can't prove statistics wrong, but that doesn't exactly make them right."

For instance, he said the combination of cheaper hardware and sophisticated software made approachable through graphical user interfaces is, indeed, creating slimmer IS staffs serving more highly technologized users.

However, Lui asked, "While you've reduced systems, what have you done to user productivity? The guy you hired to do financial analysis is now writing reports at his desktop workstation. Is this what you're paying him for?"

Executive Track

Darryl J. Bollinger has been named executive vice president of the clinical information systems group at Archer, Fla.-based consulting firm **Healthcare Systems Solution, Inc.**

Formerly, Bollinger served as chief information officer at Lee Memorial Hospital in Fort Myers, Fla.

Amy M. Rouse, programmer/analyst at the **McCormick Flavor Division** of Sparks, Md.-based **McCormick & Co.**, has been promoted to the position of senior programmer/analyst for the division. In her new capacity, Rouse will be responsible for software support of financial and System/36 environment applications in the spice giant's IS department.

The Herndon, Va.-based **Electronic Funds Transfer Association** recently named **Gary S. Roboff** chairman of its board of directors. Roboff, a vice president and director of business planning and strategy development in the electronic banking group at Chemical Banking Corp., is currently on leave from Chemical and serving as acting president and chief executive officer at New York Switch Corp. Its CEO died late last winter.

In Clifton Park, N.Y., consumer membership organization **Consumers' Buyline, Inc.** has a newly minted vice president and CIO post, and a person for the job: **Thomas A. Delaney**, former director of IS at New York-based Cochrane Hospital Supplies, Inc.

At Consumers' Buyline, Delaney will be responsible for overseeing an information systems enhancement that includes a $1 million investment in computer hardware, software and services.

Don Hendrix, who has served as information systems manager at *The Herald* in Everett, Wash., since early 1991, has been promoted to the office of director of systems and technology.

He will oversee the newspaper publisher's information systems as well as incorporate technology into the company's strategic plans.

The Washington, D.C.-based **Association of American Railroads** recently kicked off a move to unite its electronic information systems under one banner. It chose recently retired Union Pacific Railroad executive **William F. Hillebrandt** to head the reorganization effort.

In the newly created position of service quality improvements assistant to the president, Hillebrandt will help spearhead an attempt to coordinate work in various areas. These include automated equipment identification using transponder technology, and improved electronic methods for settling interline accounts among participating carriers to ensure accuracy of shipper billing.

Have you or a colleague in the information systems field recently been promoted? *Computerworld* would like to share the news with the rest of the IS community. Please contact Senior Editor Nell Margolis at (800) 343-6474 to pass along the news.

Intelligence Files

Hail to the data czar?

The governor of Washington state is now calling his chief of staff the staff director in deference to Native Americans concerned about use of the word "chief." If the move catches on, one report said, "it could wreak politically correct havoc" for chief justices, joint chiefs of staff and editors in chief.

In the business world, executives may have to rethink such titles as chief executive officer, chief financial officer and chief information officer.

Source: *Human Resources Executive*, April 1993.

Happy customers

Improving customer satisfaction is a hot business trend these days, putting pressure on chief information officers to develop strategic information systems that produce happier customers. But did you ever wonder how that affects the company's bottom line?

Using a database of customer satisfaction surveys for businesses in Sweden, researchers found that a one-point increase in the customer satisfaction index is worth an extra $3 million in profits over five years for a firm with $600 million in assets. For larger firms, the extra profit would be $39 million over five years.

Source: Eugene W. Anderson, assistant professor of marketing at the University of Michigan

Spatially challenged

When it comes to using geographic information systems (GIS), industries fall into two camps: geographically rooted and geographically challenged.

The geo-rooted industries have their base in the land and spatial data, including commercial real estate, transportation and environmental engineering. They have been the early adopters of GIS.

Now, advances in computer technology are making GIS accessible to the geo-challenged industries, such as retail, banking, insurance, manufacturing, health care and hotels. They can use GIS for locating stores and factories, targeting customers and identifying markets.

Source: "Currents," Joseph R. Francica, *Business Geographics*, March/April 1993.

Multimedia mandate

Almost a decade ago, the engineering school at Virginia Polytechnic Institute and State University (Virginia Tech) became the first large public institution to require its entering freshmen to purchase a PC. With the start of the 1993-94 academic year, the college becomes the first to require them to purchase a PC with CD-ROM and multimedia capabilities.

The multimedia PCs are expected to bring an extra dimension to courses, such as showing a civil-engineering class video clips of an earthquake's effects on buildings and soil.

Source: Virginia Tech College of Engineering, Blacksburg, Va.

Calendar

MAY 23-MAY 29

National Operations and Automation Conference. New Orleans, May 23-26 — Contact: American Bankers Association, Washington, D.C. (202) 663-5000.

International DB2 Users Group Conference. Dallas, May 23-27 — Contact: International DB2 Users Group, Chicago, Ill. (312) 527-6777.

Fuse '93 Educational Conference and International User Meeting. Atlanta, May 24-25 — Contact: Fuse, Inc., Manalapan, N.J. (908) 308-9277.

American Production Inventory Control Society 1993 Remanufacturing Seminar. Oklahoma City, May 24-26 — Contact: The Educational Society for Resource Management, Falls Church, Va. (703) 237-8344.

Midwest Electronics Expo. Minneapolis, May 24-27 — Contact: Midwest Electronics Expo, Dallas, Texas (214) 239-3060.

Trade Show and Symposium on Client/Server Technology. Regina, Saskatchewan, Canada, May 25-26 — Contact: Dawn Redmond & Associates Ltd., Regina, Saskatchewan, Canada (306) 781-7300.

NextWorld Expo '93. San Francisco, May 25-27 — Contact: Digital Equipment Corp., Andover, Mass. (508) 470-3870.

The CW Guide to Minicomputers

Open up

With some hard work and loud demands, users find they can pry open their minicomputers — to some degree

By Julie Swanson

It's the classic "want your cake and eat it, too" story. Except that in this instance, information systems managers want all their systems to interoperate, and they want their proprietary minicomputers to maintain a key role.

Minicomputer users appear reasonably satisfied with their progress toward this seemingly impossible wish. In a recent *Computerworld* survey asking IS managers and consultants to rate their satisfaction with their minicomputer vendors' move to open systems, the mean score was 7.4 on a scale of 1 to 10, with 10 being "very satisfied."

Keep in mind that there are degrees of openness. Many minicomputer users are just happy if, at this point, they can get their machine to exchange data with other platforms, such as PC local-area networks.

Minicomputer vendors are making advances on this front. "Interoperability is quite achievable with minicomputers, especially with Posix" and the Open Software Foundation's Distributed Computing Environment, says David Smith, an analyst at International Data Corp. in Framingham, Mass.

Another factor leading to improved interoperability is increased cooperation among vendors. For instance, the SQL Access Group, a consortium of software and hardware vendors, agrees on standards that allow for database access across multiple platforms. In addition, Transmission Control Protocol/Internet Protocol (TCP/IP) support on minicomputers has become a commodity, allowing for better networking among computers.

Users have had to express themselves loudly and often to get where they are today. "Vendors realize that companies are operating off of limited budgets and don't want to stop using the hardware they have," says Walt Grzasko, manager of computer resources at Dornier Aviation in Herndon, Va. But users are also demanding to move into the 21st century along with their competitors.

"Vendors will absolutely have to continue to support openness to keep their products viable," says

Open up, *page 97*

Swanson is a free-lance writer in Sunnyvale, Calif.

Inside

LAB REPORT

LAB REPORT: A PC LAN costs less to run but might not meet the complex needs of AS/400 or VAX sites. Page 97.

MIDDLEWARE

MIDDLEWARE: Opening up the minicomputer becomes more possible with middleware. Page 98.

BUYERS' SCORECARD: DEC rates highest in 'open systems' satisfaction among users. Page 100.

REPORT CARD

USERS RATE THEIR SATISFACTION WITH MIDRANGE VENDORS IN MOVING TOWARD OPEN SYSTEMS SOLUTIONS

DEC VAX	[illegible]	[illegible]
SCORE	SCORE	SCORE
75	73	64

The Search for

Computerworld and the Smit
1993 Chairmen's Committee for th
extend best wish

Launched in 1989, the Computerworld Smithsonian Awards Program salutes those who find answers with information technology. This annual awards program, representing a spirited partnership between Computerworld and the Smithsonian Institution's National Museum of American History, brings together the user and vendor communities in public recognition of innovation and hard work.

1993 Finalists Nominated by the Computerworld Smithsonian Awards Chairmen's Committee:

BUSINESS & RELATED SERVICES

HumanWare, Inc.
Accessibility Modules for the Visually Impaired
Nominated by Toshiba America Information Systems, Inc.

Postal Buddy Corporation
Postal Buddy Kiosk
Nominated by EDS

Electronic Retailing Systems International, Inc.
Electronic Shelf Labeling Systems
Nominated by Price Waterhouse

Syntha-Voice Computers, Inc.
Window Bridge
Nominated by Digital Equipment Corp.

McKesson Drug Co.
Acumax
Nominated by EDS

EDUCATION & ACADEMIA

Oklahoma State University
Integrated Campus Access Management System
Nominated by Diebold, Inc.

Stanford University
MAEstro Project
Nominated by Sun Microsystems

Harvard Business School Publishing
Digitized Access to HBS
Nominated by Xerox Corporation

Harvard Business School/Office of Information Technology
Custom Textbooks
Nominated by Eastman Kodak

Center for Applied Special Technology (CAST)
Gateway Programs
Nominated by Price Waterhouse

ENVIRONMENT, ENERGY & AGRICULTURE

BP Exploration
Enterprise Information System
Nominated by Sybase

Vista Environmental Information, Inc.
VISTA Report
Nominated by CompuServe

Paramax Systems Corporation
NEXRAD, WSR88-D, The Nationwide Network of Advanced Weather Radar
Nominated by Unisys Corp.

Organization for Tropical Studies
Database and Identification of Species in the Costa Rican Rainforest
Nominated by Apple Computer, Inc.

Environmental Resources Information Network
Environmental Resources Information System
Nominated by Sun Microsystems, Inc.

FINANCE, INSURANCE & REAL ESTATE

AT&T Universal Card Services
Universal Windows/Information Technology
Nominated by Sun Microsystems, Inc.

NASD
Computerized Stock Market
Nominated by MCI Communications

Philadelphia Stock Exchange
Electronic Order Book
Nominated by Borland International, Inc.

Johnson & Higgins
Use of Lotus Notes
Nominated by Lotus Development Corp.

Fannie Mae
FannieMaps [GIS Mapping System]
Nominated by Sybase Inc., Nolan & Norton Co.

GOVERNMENT & NON-PROFIT ORGANIZATIONS

Arkansas Department of Human Services
Multiple Automated Transaction Submission
Nominated by EDS

Naval Electronic Systems Engineering Activity (NESEA)
Conversion of Technical Manuals
Nominated by Microsoft Corp.

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New

hsonian Institution thank the
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es to the finalists.

Aurora Police Department
Optical Imaging Records Management
Nominated by NCR Corp.
State of Tennessee, Department of Corrections
Tennessee Offender Management Information System
Nominated by Andersen Consulting
Los Angeles Department of Public Social Services
L.A. Automated Fingerprint Image Reporting and Matching System
Nominated by EDS.

MANUFACTURING
Ruiz Foods Products, Inc.
Enterprise-wide Systems
Nominated by Andersen Consulting
Perdue Farms, Inc.
Credit Management System
Nominated by Price Waterhouse
Praxair, Inc. (Union Carbide)
National Logistics System
Nominated by Andersen Consulting
Oticon A/S
Enterprise Wide Systems
Nominated by Andersen Consulting
United Technologies, Sikorsky Aircraft
Computer Integrated Manufacturing Planning
Nominated by Andersen Consulting

MEDIA, ARTS & ENTERTAINMENT
AAP Communications Services
ConferNet
Nominated by PictureTel Corp.
MIT Media Lab
Dorothy at a Glance
Nominated by NYNEX Corp.
The National Gallery of Art
Precise 3000
Nominated by Software Engineering of America, Inc.
WGBH Educational Foundation
Descriptive Video Service
Nominated by Bull HN Information Systems, Inc.
The U.S. Holocaust Memorial Museum
Multi-media Interactive System
Nominated by NetFRAME Systems, Inc.

MEDICINE
Pfizer, Inc.
Clinical Research Forms, Inc.
Nominated by Excalibur
The Scripps Research Institute
Telemicroscopy
Nominated by Sun Microsystems, Inc.
Gendex Corporation
VIXA
Nominated by Wyse Technology, Inc.
New York University Medical Center
Diagnostic Analysis Using Image Fusion
Nominated by Sun Microsystems, Inc.
Rensselaer Polytechnic Institute
Adaptive Current Tomography
Nominated by Price Waterhouse

SCIENCE
Rockwell International Corporation
Electromagnetics
Nominated by Cray Research, Inc.
Cold Spring Harbor Laboratory
QUEST Protein Database Center
Nominated by Sun Microsystems, Inc.
Eli Lilly and Company
Computational Chemistry
Nominated by Cray Research, Inc.
Institute of Human Origins
Computer Controlled Dating Techniques
Nominated by Apple Computer, Inc.
The Pittsburgh Supercomputing Center
Supercomputer Simulation of Enzyme DNA
Nominated by Cray Research, Inc.

TRANSPORTATION
Covia Partnership
Integrated Software Management
Nominated by Legent Corp.
Federal Express
Command and Control
Nominated by Sun Microsystems, Inc.
Covia Partnership, Network Development Group
On-line Reporting and Business Information Tracking
Nominated by Systems Center, Inc.
SITA
CUTE: Automated Network-based Solution
Nominated by Novell, Inc.
Baystate Shippers, Inc.
Command System
Nominated by AT&T

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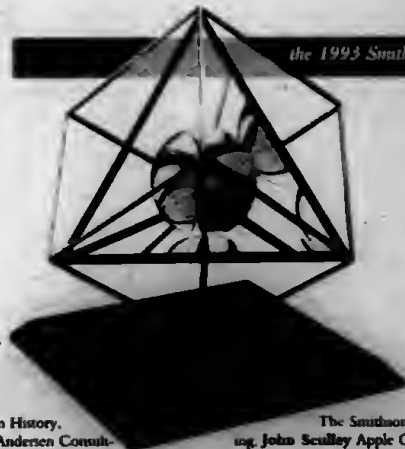

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Open up

CONTINUED FROM PAGE 93

Mark S. Peterson, director of market research at ADM Consulting in Cheshire, Conn. "This is one of the great things that's happening to users."

No cakewalk

Opening the minicomputer platform isn't without its headaches, of course. "It's still not plug and play," says Roy Wiley, geographic information systems coordinator for Pueblo County in Pueblo, Colo., which has been laying the groundwork for an open computing environment for three years. "[But] we've lived through consultants and funding roller coasters. We can certainly live through this."

REALITY CHECK

Name a minicomputer, and Pueblo County probably has it: There's a Digital Equipment Corp. VAXcluster running electronic mail and some VMS applications; two IBM Application System/400s housing legal and support service applications in addition to E-mail; a Unisys Corp. 6085, which runs the sheriff's systems; and a host of other hardware, such as PCs and DEC workstations.

The county eventually wants everyone to be able to access needed data, no matter where it resides or which department owns it.

Currently, all of Pueblo County's hardware interoperates using TCP/IP running over fiber optics via Fiber Distributed Data Interface. "It was easy to get our Digital equipment to talk to each other," Wiley says. "A little more effort was required to connect to the Unisys."

In 1990, Pueblo County added the AS/400s to its family of hardware. "The communication between the AS/400 and PCs was very fragile and difficult," Wiley says. "We constantly had to change the setups in our communication. With the VAX, however, once we loaded our TCP/IP drivers, we never had to worry" about PC connections.

He says the capabilities of the AS/400 have improved over time. Recently, Pueblo County installed a TCP/IP communications board that allows for more seamless integration between PCs and the AS/400.

> When asked to define "open systems," respondents' answers ranged from "the ability to move software from one platform to another with relative ease" to "the ability of heterogeneous computers to communicate well with minimal technological barriers."

The county also uses IBM's PC Support software, which is working well to facilitate communications, according to Wiley.

On the DEC side, Pueblo County uses DEC Pathworks for communications with its PCs. "Using the DECnet protocol would give us more services, such as printer and peripheral sharing," Wiley says. "But there's no TCP/IP support. We want to maintain as much transparency as possible."

REALITY CHECK

Inflexible PCs

Wiley says he believes the limitation lies more in the PC architecture than in the DEC communications software. When Microsoft Corp. Windows NT's multithreaded technology is available, Wiley hopes remote PCs will be able to share peripherals.

Today, the county's extensive information systems operate in a fairly seamless manner. So far, Pueblo County has ventured into only the first two layers of the seven-layer International Standards Organization/Open Systems Interconnect reference model. "Anything beyond that is almost impossible today," Wiley says.

At Moyer Packing Co., the issue is interoperability between DEC Rdb databases and Windows applications running on the PC. The beef packer and renderer in Souderton, Pa., currently operates a DEC VAXcluster with 13 nodes. The VAXs, which house many Rdb databases, run over OpenVMS.

Because the beef industry is a high-volume, low-margin business, it needs to monitor its volatile financial information closely. "We have to create profit-and-loss statements every day," says James P. McIlvaine IV, director of corporate MIS at Moyer.

But whereas the corporate data is stored in Rdb, "the good applications for accessing data exist on the PC," says Scott Harper-Sotan, principal applications architect at Moyer.

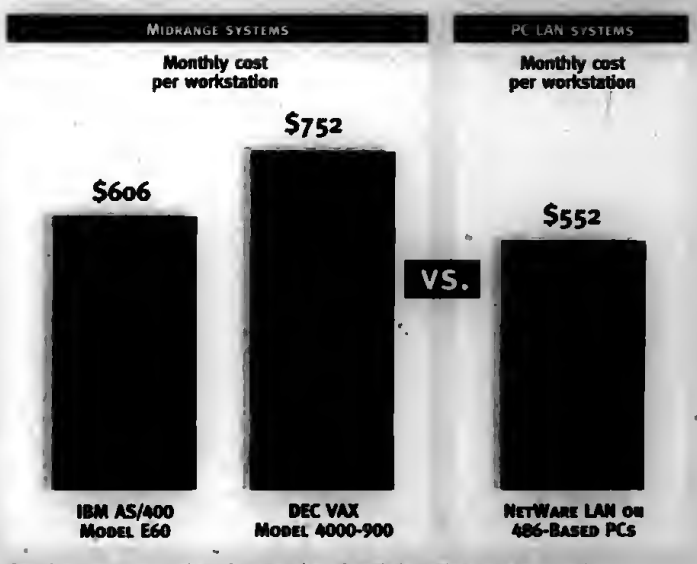
To that end, the cost accounting department currently takes reports from the VAXcluster and keys them into stand-alone spreadsheets. To eliminate this re-

Open up, *page 98*

Cost face-off: Minis vs. PC LANs

LAB REPORT

IBM's AS/400 is $54 per workstation more expensive than a PC LAN, and the DEC VAX is $200 more expensive, but the LAN can't handle sophisticated work loads or major application enhancements without increasing staff costs



Based on 15n sites running a large number of similarly configured systems with different work loads.

	MINIS	LANS
WORK LOAD SOPHISTICATION	High	Low
ABILITY TO ENHANCE APPLICATIONS	High	Low

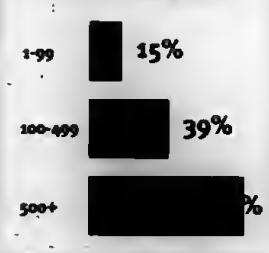
- **CENTRAL SITE ALLOCATION:** Hardware, software, staff used to support remote sites
- **APPLICATIONS DEVELOPMENT STAFF:** Manager, programmers
- **APPLICATIONS SOFTWARE:** Accounting, office automation, PC services, support
- **OPERATIONS STAFF:** Manager, operators, technical support, specialists, help desk, administrators, outside services
- **SYSTEM SOFTWARE:** Operating system, development database, systems management tools, transaction processing monitor, compiler, robust LAN for mixed clients, SNA-based WAN connections, five-year software support
- **HARDWARE:** CPU, memory, disk/tape, terminals/workstations*, maintenance, depreciation

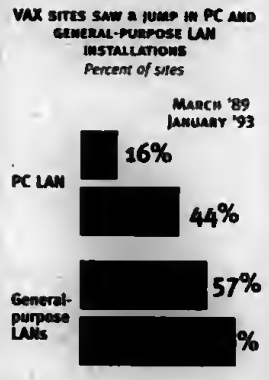
*Includes 60% PCs, 40% terminals

Source: International Data Corp.

LAN infiltration

In both DEC and IBM minicomputer shops, LANs are becoming a given





Source: Computer Intelligence/Infocorp

Middleware to the rescue

By David Baum

Fitting a minicomputer into an open systems strategy ain't easy; luckily, there's middleware.

Middleware — an amorphous category of products that is becoming one of the hottest topics of the decade — shields developers from having to be cognizant of the physical location of each database and helps them wrestle with a host of networking details to distribute applications.

Essentially, middleware provides a software bridge between the application and the operating system, explains John Rymer, an analyst at the Patricia Seybold Group in Boston. "It helps developers sort out today's tremendous diversity of protocols, platforms and programming languages so they can spend more time focusing on what they do best: building applications."

Middleware can also encapsulate database management systems, enabling queries to many different types of DBMSs through a standard interface. This allows multiple databases to be combined into a single database view, with all distributed queries and updates appearing as local operations on a single database.

There are many types of middleware products, but the fastest growing area is message-delivery systems. Message-delivery systems use a common set of application programming interfaces to exchange messages among the pieces of a distributed application.

Remote procedure calls (RPC) are another accepted method, but because these are coded into each application, network addresses are compiled into the application code. If something changes on the network, programs must be modified and recompiled.

Message-delivery systems are much more flexible. They determine network addresses at runtime so that if network configuration changes, the programs don't need to be modified.

"Messaging systems aren't tied to a specific operating environment or networking protocol the way RPCs are," says Ken Fleming, director of technology at Encompass in Cary, N.C., a value-added reseller for Suite Software, Inc. in La Mesa, Calif., a developer of message-based middleware.

If your company is like most, you've got a slew of application code in production and have made a good start toward building intranetwork infrastructures among minicomputers and PC local-area networks. What you lack is an enabling layer of software between the operating systems and the applications you use. What you lack is middleware. •

Baum is a free-lance technology writer based in Santa Barbara, Calif., who specializes in application development.

MIDDLEWARE

A sampling of message-based middleware products

COVIA TECHNOLOGIES
Communications Integrator
Rosemont, Ill.

DIGITAL EQUIPMENT CORP.
DECmessageQ
Maynard, Mass.

HORIZON STRATEGIES, INC.
Message Express
Needham, Mass.

MOMENTUM SOFTWARE CORP.
X-IPC
San Francisco

PEERLOGIC, INC.
Pipes
San Francisco

SUITE SOFTWARE, INC.
SuiteDome
La Mesa, Calif.

SYSTEMS STRATEGIES, INC.
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New York

Open up

CONTINUED FROM PAGE 97

dundancy, Moyer is looking forward to installing a gateway between its PCs and Rdb.

"We have a couple of [temporary fixes] in place now," Harper-Sotan says. For instance, PC users use DECQuery, a fourth-generation language query tool, to access files on the mainframe. "It's a fine tool for querying," he says, "but the integration into Windows applications isn't as seamless as we want."

Moyer hopes to use Open Database Connectivity (ODBC) — Microsoft code that will purportedly allow Windows and Windows NT applications to transparently access multiple databases.

ODBC comprises a standard application programming interface, as well as a standard SQL statement for accessing databases. It is based on standards set by the SQL Access Group, whose members include DEC and Microsoft.

"Our understanding is that the ODBC driver will allow our Microsoft applications to fairly seamlessly access our Rdb databases," Harper-Sotan says. "With this final piece in place, I don't think it will be too difficult to import and export data."

Coupling hardware

Carlisle Tire and Rubber's Tires and Tubes Division is also dedicated to moving toward an open environment.

"Our ultimate goal is to get [all of our hardware] on one network," says Ed Haller, manager of business systems at the firm. Carlisle's 10 divisions operate independent of one another on a range of minicomputers, from Hewlett-Packard Co. to IBM to Unisys.

Why the interest in openness? Often, minicomputers house data such as inventory levels, which PC-based employees need in order to be more responsive to customers.

"We're interested in bringing our division together," Haller says. Currently, "we have two, three or even four people that are entering data in the same place."

To accomplish this, the company is replacing its HP Series 48 and 58 computers with an HP/3000 947 series minicomputer. Eventually, 60 PCs and 15 Sun Microsystems, Inc. SPARCstations will interact with the 3000 via Ethernet running TCP/IP. "We expect our HP to run under Posix. This should allow us to integrate whatever we want," Haller says.

Although the division's strategy is still in the planning stages, the first step is to get everything hooked together. "I think that hardware vendors are supportive of this. HP is one of the leaders in service and reliability," he says. But Haller says he still wants to reserve his option to switch hardware at any time and hopes that opening up his minicomputer will allow just that.

Steep learning curve

Something that can't be overemphasized when opening the minicomputer is the very steep learning curve. "You need a large staff to get new technology in place and to train users," Wiley says. The key, he says, "is to become educated ourselves so that we can make good decisions that won't lock us in."

Even once on the path to open systems, it's still a bumpy ride. "I don't think one person is capable of figuring out how to put everything together," Harper-Sotan says. "But while it may make our job more difficult at times, we're actually doing a better job for our users." •

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Buyers' Scorecard: Mini vendors strong in scalability, weak in interoperability

By Mary Brandel

Here's a riddle for you: What is open but really not open, proprietary but not completely closed?

Answer: a minicomputer. That riddle is today's reality, according to users, analysts and resellers surveyed by *Computerworld*. The tide is definitely turning away from the old equation "open equals Unix." In theory, *any* platform can be an open systems candidate, as long as it can prove itself in five categories: support for major development languages, scalability, interoperability, adherence to open systems standards and software portability (see chart at right).

We spoke with 151 users, analysts and resellers of Digital Equipment Corp.'s VAX, Hewlett-Packard Co.'s HP 3000 and IBM's Application System/400 and System/3Xs, and while they seemed reasonably satisfied with their respective vendor's progress toward open systems, there are some definite sticking points (see charts below).

Scalability, language support

As it stands today, the major minicomputer lines are doing all right in scalability (scoring a 7.8 on a scale of 1 to 10) and support for development languages (7.5).

HP's MPE/IX operating system can be seen as the most scalable. HP claims 100% object-code compatibility among its platforms, and "the underlying architecture is integrated from host to desktop," says Nancy Stewart, an analyst at Dataquest, Inc. DEC's OpenVMS operating system runs on any scale from mainframe-class to desktop systems, including clustered machines. OS/400 supports the complete line of AS/400 systems.

The Big 3 are also coming on strong in their development language support. IBM has licensing agreements with object-oriented tool vendors Cognos Corp. and Object Technology, Inc., while HP supports a number of fourth-generation languages.

The HP 3000 also supports a number of client/server tools to build graphical user interfaces, enable database access and distribute application processing, including Powersoft Corp.'s PowerBuilder and Gupta Corp's SQLWindows. DEC supports C++.

Portability, open standards

Where the mini vendors score low is in portability (scoring a 6.7 overall), adherence to open systems standards (6.5) and interoperability (6.5).

Actually, according to survey results, users aren't overly concerned about consortium-based standards, such as Posix, Distributed Computing Environment (DCE) and X/Open Co.'s X/Open. However, the vendors are quite interested in vocalizing which ones they support.

DEC is probably the strongest in portability standards, as it supports three levels of Posix and is ahead of the others in DCE, a standard that promises to distribute application processing across heterogeneous platforms.

"DEC's DCE rollout schedule is comparable to [that of] the Unix server vendors," says Joseph Gottlieb, vice president and service director, open computing and server strategies, at Meta Group, Inc. in Westport, Conn. DEC also supports Version 3.0 of the X Open Portability Guide, which addresses portability in great detail — a claim neither HP nor IBM can make.

Users gave IBM the lowest score for standards compatibility, though the analysts we spoke with are quite impressed with the company's work with Posix.

"IBM has changed the underlying process model of the AS/400," says Teresa Elms, president of Elms Information Services Group in San Diego, "which means that things like the way objects are accessed are Posix-compliant now. The reengineered process model and the new hardware on the high end justify calling this a whole new machine."

Outside of these standards, portability is a tough nut to crack. On the IBM AS/400, for instance, if you write applications to take full advantage of the OS/400 operating system and relational database, they are not going to work outside

OVERALL SATISFACTION

RATINGS ARE MEAN SCORES FOR ALL THREE VENDORS, BASED ON A 1-TO-10 SCALE

7.8 Scalability
Ability to run applications without modification on larger or smaller models of the same minicomputer.

7.5 Support for major development languages
Support for common languages, such as Cobol and C, common development tools and GUIs for developing open systems.

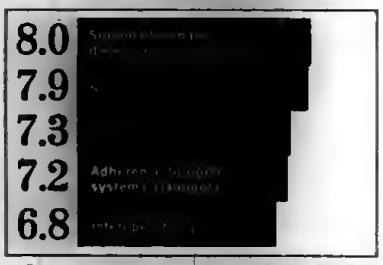
6.7 Portability
Ability to move applications from the vendor's minicomputer to other 'open systems' operating systems or hardware platforms without radically modifying the application.

6.5 Interoperability
The extent to which the minicomputer can be integrated into networks with other types of processors. For example, can the minicomputer be linked with minimum effort to mainframes, PC clients running Windows, etc.?

6.5 Adherence to open systems standards
The minicomputer's support for recognized 'open systems' standards, such as standard Unix operating system SQL databases.

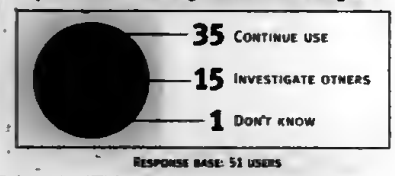
DEC VAX

OVERALL SCORE 75



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST

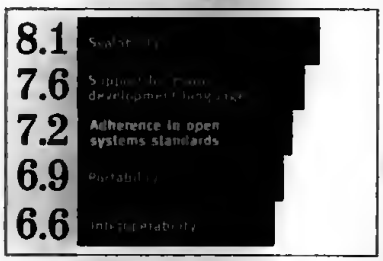
Do you plan to continue using this midrange system or to investigate new technologies?



RESPONSE BASE: 51 USERS

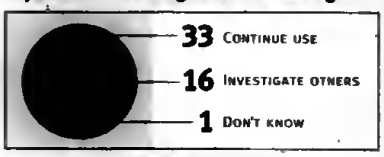
HP 3000

OVERALL SCORE 73



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST

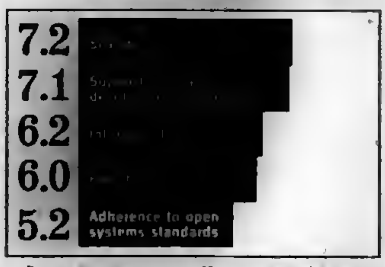
Do you plan to continue using this midrange system or to investigate new technologies?



RESPONSE BASE: 50 USERS

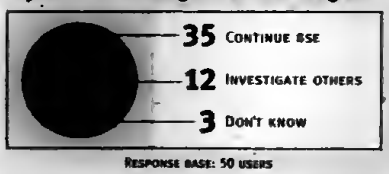
IBM AS/400 AND SYSTEM/3X

OVERALL SCORE 64



RATINGS ARE BASED ON A 1-TO-10 SCALE, WHERE 10 IS BEST

Do you plan to continue using this midrange system or to investigate new technologies?



RESPONSE BASE: 50 USERS

that environment. On the DEC VAX, application portability is possible via application calls to basic network services.

Interoperability

A nearly equal concern for users is interoperability, which represented one of the lower scores for all three systems. While it's true that pure interoperability is not achievable (at least not without a great deal of effort and probable loss of functionality), the minicomputer vendors have added a lot of support for other environments in the past six months.

The vendors all support SQL (allowing for data exchange with industry-standard databases), and they all support Transmission Control Protocol/Internet Protocol (the multivendor interoperability protocol of choice).

HP and DEC have decent support for PC environments. "DEC's PC integration has been largely dependent on Pathworks, which effectively makes the VAX look like a LAN Manager server, and support for NetWare clients is improving," Gottlieb says. In addition, DECWindows puts Microsoft Corp.'s Windows on a VAX 4000 terminal.

The HP 3000 can function as an application or network server for users in a number of environments, including DOS, OS/2, Windows, Unix, X Window System and Apple Computer, Inc.'s Macintosh.

IBM's AS/400 achieves PC integration mainly through third-party products such as Rochester Software Connection, Inc.'s Showcase and Wall Data, Inc.'s Rumba, though its PC Support does support Windows Dynamic Data Exchange.

"IBM recently enhanced its PC Support program, which pulls Windows and PCs closer to the AS/400," Gottlieb says. However, he continues, users of IBM, DEC and HP proprietary servers still rely on terminal emulation for most applications. "That's not client/server," he adds.

Unlike the AS/400, DEC and HP can put an Oracle Corp. database or other third-party database on the mini and have the front end running on the PC. "That's where customers have moved forward with client/server-type applications that go beyond terminal emulation," Gottlieb says. IBM's database is integrated with the AS/400 operating system and thus cannot be chopped up as easily.

In the end — and despite ratings that reflect reasonable satisfaction — users are pretty cynical when it comes to vendors and open systems. Chalk that up to lack of conviction that vendors are willing to cooperate to achieve that goal. As one user said when asked the biggest obstacle in achieving open systems: "[Vendors] need to maintain their proprietary income; they would lose control of their applications. That's the No. 1 problem." •

John Parker, a free-lance writer based in Wellesley, Mass., contributed to this report.

The Unisys factor

Unisys Corp. positions its low-end mainframe models — the A7 through the A11 — against IBM AS/400-level machines. In response to "open" demands, the company announced features that add a level of interoperability, scalability and portability. For instance, it now offers an implementation of NetWare for Unix; close coupling with OS/2 and Unix platforms; portability via the Link and Mapper fourth-generation languages; and the ability to run applications without recompilation up and down the line, according to Bill MacLean, program manager for A series software and networking.

METHODOLOGY

User names were obtained from a combination of vendor and nonvendor sources. First Market Research Corp., an independent market research company in Austin, Texas, conducted the survey and tabulated the results.

Users rated their satisfaction with their installed products and were not asked to compare or rate one product directly against another in the Scorecard.

ACKNOWLEDGMENT

Computerworld thanks the *Computerworld* Database Division for its assistance in preparing this Buyers' Scorecard.

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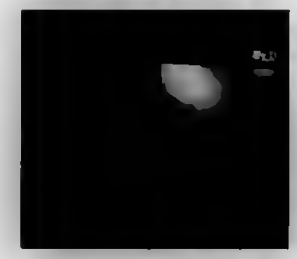

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CYC-ED UP

Skeptics called Doug Lenat crazy for thinking he could program common sense into a computer. But the computer scientist's 10-year Cyc project shows he is succeeding in doing just that.

Doug Lenat is leading perhaps the most massive programming effort in the history of computing: He is infusing a knowledge base of common sense into a computer at Microelectronics and Computer Technology Corp. (MCC), an Austin, Texas-based research consortium.

Lenat's project, known as Cyc (named after the first encyclopedia), is a 10-year effort that began in 1984 with little hoopla and even less hope of success. Skeptics and cynics questioned the sanity of someone seeking to put all the world's knowledge into a computer. But others, such as Apple Computer, Inc. fellow and PC pioneer Alan Kay, think Lenat could pull it off. In fact, Kay calls Lenat one of the "two or three smartest computer scientists in the U.S."

To achieve any practical artificial intelligence in a computer, Lenat believes what many in the AI community don't accept: You have to input knowledge manually and painstakingly to create a computer system that can eventually learn on its own.

Now, nine years into the project, Lenat claims he has already achieved success. He says several MCC member firms — Apple, Digital Equipment Corp. and Microsoft Corp. — are working on products that will incorporate Cyc.

Lenat says Cyc will likely play a key role in network advice services, such as CompuServe; direct marketing, in which companies use Cyc to anticipate customer buying habits; smart spreadsheets; database cleaning, in which Cyc detects database errors or inconsistencies; and modeling new structures for companies in the rush to re-engineer work flows.

Kay says he expects computer makers will incorporate Cyc as a utility into the basic read-only memory of every machine.

The 42-year-old Lenat spoke recently with free-lance writer Glenn Rifkin about his life and work.

Q. How did you get started in computer science and on Cyc?

A. In 1971, as part of getting a master's degree in applied mathematics, I had to take one computer science course. I took a course being offered for the first time based on Nils Nilson's then brand-new book on AI. It seemed exactly the right kind of thing to get into.

I tried to build programs whose output would be capable of surprising me, which meant learning programs, programs that tried to discover things on their own. My Ph.D. thesis, in 1975, was a demonstration that you could indeed do that kind of learning on the computer in various domains.

The net result of all those years working on machine learning was realizing that learning occurs at the fringe of what you know. Namely, you learn from new things similar to what you know already. The more you know, the more easily you can learn.

So what does that mean? It means if you want to do machine learning, you have to start from an enormous base — like the world, common sense, general knowledge, probably a whole bunch of facts as well — do analogy, generalization, case-based reasoning, using this enormous library to be reminded of things.

CYC CAN RUN ON AN INTEL 1486-BASED DESKTOP MACHINE

It became clear that what we needed to do was put together this large body of knowledge.

Q. Where did you take your ideas?

A. At that point, in the early 1980s, I began consulting with Alan Kay at Atari. He was the head of the research group and was interested in what he called the Electronic Encyclopedia Project. When Atari decided it really wasn't in the research business, the project fragmented into pieces.

Luckily I got the good piece: I got the knowledge base piece.

Marvin Minsky, Alan Kay and I did some calculations and independently came up with a figure of about a million things a system would need to know if it was going to serve as the basis for this machine learning effort.

Q. How did you end up at MCC?

A. In 1984, an old friend went to MCC, which was just forming. There were about 40 employees. My friend convinced me to come and talk to him.

I met Admiral Bobby Ray Inman [the first director of MCC], who is probably the most charismatic individual I've ever met. He convinced me that there was no way we were going to do, in academia or in any one company, this million-rule expert system that would take a couple of hundred person-years of work. Even a large company is going to balk at a decade-long project that's going to cost tens of millions of dollars, that has a very low chance of success (we estimated it at between a 2% and 10% chance of success) and that, if its basic premise is correct, will have no payoff in the intermediate years.

Inman convinced me that MCC was the one and only place where this project could be started and done.

CYC DEFINED

The millions of assertions (facts, rules, etc.) about the various everyday objects, actions and other concepts/relationships that together comprise our late 20th century Western consensus reality.

Q. Have you ever thought of an analogy to what you are doing? Is it like the Manhattan Project? Is it like God creating the universe?

A. It's a lot like the effort in putting together the very first encyclopedia. Of course, we're not putting in the same kind of content. What we are putting in is completely independent to that; it's the prerequisite for the encyclopedia. It's the things that all the encyclopedia articles assume the reader already knows about the world before he reads an article.

Q. What is the current status of the project?

A. Most of our [member] companies are engaged in application efforts building sort of proto-products, which may hit the market in two to four years. The good news is that the probability of our succeeding has changed from 2% to 10% to 95% to 100%. We're now at the stage of finishing it up.

Q. Can you discuss what we can expect from future Cyc-based products?

A. I can talk generically about some of the classes of applications.

An important generic class of application is information retrieval and filtering. The problem I see is that everyone is going to have too much access to information. What you are going to want is filtering, getting relevant information and not this firehose of all the information you might get if you're not careful.

So, for instance, if you're a commercial photographer putting together a layout, you may want a certain image. You have access to an on-line library of 10 million images.

Will Van Overbeke

▲ **Doug Lenat** *says computers with common sense 'would make you and everybody else think better and be smarter'*

CYC AT A GLANCE

Start date:	1984
Project duration:	10 years
Current number of staffers:	30
Rules entered per day:	200
Current number of rules:	2 million
Current project cost:	$25 million

How are you going to find that image? By and large, you have to rely on fairly short captions. Statistical techniques and key words and synonyms are not going to get you very far.

Suppose you are doing a *Sports Illustrated* article and you need pictures of male jocks not wearing shirts. If you put a query in like that, how would you find an image such as Pablo Morales winning the 100-meter butterfly at the 1992 Olympics? There are no words in common there.

You just somehow have to infer that the 100-meter butterfly is a kind of swimming event and that if people are in swimming events, then they are intentionally in water, and if so, they will be wearing a typical swimming suit, which for men in modern civilization is topless.

That inference is not hard for most of us; it's fairly trivial. But the point is, if you don't have those pieces of knowledge, you're never going to draw a connection between the query and the caption the way it was stated.

When you have this massive online library of images, of text files, of mail messages, of who knows what, how will you make sense of it? How will you find relevant information?

Q. Does this idea extend beyond information retrieval?

A. The same thing applies to data that is apparently more structured in spreadsheets and relational databases. Even within a single company, people have no idea where to look for the right data. Even if they know it's somewhere in one of the spreadsheets they have legal access to, they may not be able to find it or easily interpret what a column means.

If there are sets of information that contradict each other in two different spreadsheets or databases, you might go for years or forever without realizing there is a contradiction.

Another application is database cleaning, in which Cyc is used as a kind of sanity checker for the data in the database: is it reasonable that this person is older than his parents?

Q. Conceivably, then, would Cyc take the form of a software package that someone with a PC running a database or spreadsheet package would add to clean up the database?

A. Yes, that's exactly right. It would be a kind of add-in utility for spreadsheets and databases.

Q. Are software companies looking at this?

A. Yes. Our participants include Microsoft, Apple, Digital, Eastman Kodak Co., Motorola, AT&T, Bellcore and all the regional Bell operating companies. There is also Interval Research Corp., a company [Microsoft cofounder] Paul Allen recently started that [former IBM executive] Dave Liddle is running in Palo Alto, Calif.

Q. What are other Cyc applications?

A. We're also using Cyc to do enterprise modeling to model an organization, how it spends its time and money. We look at what the flow of people and data and physical objects through the organization is.

Just as we human beings cope with one another's forms and terminologies using our common sense to allow ambiguity and terseness, businesses, by using Cyc-based models of one another, will be able to maintain their individuality and yet be able to talk to one another automatically.

Q. At what point will you feel you've accomplished what you set out to do?

A. Probably about three years from now — by mid-1996. The number of knowledge enterers [now at 28] will go down. Much of the knowledge entry will be natural language input by tutoring rather than by the brain surgery we've been doing.

The whole character of the project, as far as content, will change. Instead of putting in things about clothing and furniture and professions, we'll be putting in axioms about types of birds that live in Ecuador and other detailed, expert system-like topics. •

CYC COURSE

Lenat and his crew are busy 'teaching' Cyc rules such as the following:

An unsupported object will fall toward the ground.

A physical object can't be in two places at once.

No cats are dogs.

People sleep at night and get up in the morning.

At fast food places, you pay before you eat.

Living is a weaker form of loving.

Jamie Gabarino

Micro managers' roles change to become all-encompassing

By Leslie Goff

JOB RESPONSIBILITIES HAVE changed so much for microcomputer managers that the title may no longer describe the position. The job name has given way to more descriptive titles such as director of network services, manager of end-user computing and director of systems and technology.

"The title micro manager was appropriate at the time [it was created] when all we managed were PCs," says Lynne Baron, director of systems and technology at Standard & Poor's Corp. in New York. "But now the position includes [responsibility for] anything that is not a mainframe."

Even in those companies that haven't updated the title, micro managers rank fairly high within the information systems organization. For instance, Jacqueline A. Bynsdorp, whose title at Jockey International, Inc. in Kenosha, Wis., is PC coordinator, reports directly to her company's vice president of IS. She oversees PC application development throughout Jockey for systems such as an IBM OS/2-based imaging system, a universal product code design system and a Microsoft Corp. Windows-based executive information system.

"I fancy myself more of a technology development analyst than a PC coordinator," she says.

At a glance

Old title: Micro manager

New title(s): Director of network services; manager of end-user computing; director of systems and technology; PC coordinator.

Role in IS: Responsible for PC hardware and software support, application development, LANs, WANs, user training, purchasing and staff management.

Ultimate career path: Director of IS

Requirements: Comprehensive knowledge of PC hardware, operating systems and applications; networking skills; communication skills; leadership and management ability.

Whatever the title, today's micro managers — given the increased attention on local- and wide-area networks and client/server architectures — are prime candidates to become tomorrow's IS directors. In many cases, they have traded in hands-on support for more management responsibility, but with their increased visibility in the organization, they are under more pressure to keep up with the constant advances in software, hardware and network management.

Training and teaching

For instance, Jonathan Johnson, manager of end-user computing at Norwalk Hospital in Norwalk, Conn., has undergone network and systems administration training in addition to training in Novell, Inc.'s NetWare network operating system and all the software packages his group supports. He has also had to beef up his teaching skills to train users more effectively.

"Being able to train others, to communicate with users from the top to the bottom, is key," he says. "And we have to be more advanced in our knowledge of everything. There are no more basic solutions to users' problems. Their problems are more sophisticated."

Jo Haraf, director of network services at Booz Allen & Hamilton, Inc. in McLean, Va., says she keeps up with new technology by "pumping anyone who gets near me for information."

Haraf's career path is representative of the quintessential micro manager. She was a micro manager for four years, following an initial career in the mainframe world. She was promoted last month from director of office technology to her current title to reflect her growing responsibility for WANs.

"I started out as the person you called when you couldn't run your word processor. Now I'm the LAN/WAN and voice systems person," she says. "That's an evolution more micro managers find themselves in. We're the logical choice to manage networks because we're the ones who started out with the stand-alone PCs, integrated them into LANs and integrated those into WANs."

Haraf said her career has evolved along with PC technology and that now she is taking steps to "come up to speed on WANs."

Micro managers at mainframe-centric companies, however, may have further to go than their colleagues at such companies as Jockey, Booz Allen & Hamilton or Standard & Poor's. James Withall, an information analyst at the Arbella Mutual Insurance Co. in Quincy, Mass., says he sees his career path flattening temporarily because Arbella's IS strategy "has more of a mainframe orientation." He works outside the IS group as a computer manager in the company's finance department.

Nevertheless, he says he sees "an ongoing role for the position I'm in. In time, recognition of the role of applications developer in the PC area is going to grow, and the corporate structure is going to change with that. So, there's a good long-term outlook."

Necessary tool

"PCs started out as a novelty, a curiosity," Withall adds. "What was once a peripheral activity has become more than 100% accepted as mission-critical. Management has accepted that a PC on a desktop is just a given, like a telephone."

Job satisfaction among the micro managers interviewed runs high, as do career aspirations. But consequently, so does stress.

Bynsdorp says she works "night and day," but the payoff has been moving up three management levels in the past six years.

Goff is a free-lance writer based in New York.

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Career advice for the '90s

Phone interviews — a tough call

Fast Track is a twice-monthly column dedicated to answering questions on career directions. This week's guest adviser is Jim Parker, a senior recruiter at Technical Connections, Inc., a Los Angeles executive search firm that specializes in placing computer professionals.

Q. I am a senior software developer who recently launched a job search. I have noticed that many of my prospective employers used a preliminary phone interview. How can I best handle such a discussion?

A. Many managers resort to phone interviews in order to best utilize their time, particularly because of the industrywide downsizing of information systems staffs. It is a trial run for which you should have two goals: Convince the manager that he should meet you face to face, and gather enough information about the position so that you will do well in the follow-up meeting. Thoroughly research the company before the call and keep pertinent information by the phone. At the end of the call, if a meeting has not been arranged, directly ask for one.

Q. I work for a large manufacturing company as a senior programmer. I have extensive Cobol, CICS and DB2 skills. My position is secure, but I'm concerned that my skills are becoming less in demand. What can I do to remedy this?

A. You should be concerned that the market for your skills is steadily shrinking because of the inroads that are being made by downsized and client/server-based systems. You would be well-served to investigate diversifying your skills to other platforms. Gaining experience with midrange, Unix-based or microcomputer applications and tools will increase your marketability should you want or need to change jobs.

Q. My company develops accounting software for the IBM Application System/400. I have been a software engineer on the product for the past three years. I'm interested in selling the product, but management has blocked this because of my lack of sales experience. I know I can sell it, but how can I convince them?

A. Because of the direct impact on the company's bottom line, it is typical that a sales manager will want to hire proven talent. Your best bet is to try a two-step approach. A transfer to a technical sales support role would allow you to learn your company's sales techniques and get to know the needs of the clients. This is a very common back door into sales and allows you to inspect the position closely before jumping in.

Q. I am graduating from college next month with a bachelor's degree in computer science. I'm getting a little nervous because I still don't have a job lined up. What should I do?

A. Getting a job in this market requires determination, planning and persistent education for even a skilled professional.

Absorb yourself in your search just as you would in a job. Breinstorm your options. Make a list of target companies and call at least eight per day. Do research at the librery. Ask your friends for referrals. Join professional organizations. Attend job fairs. Evaluate the myriad help-wanted databases. Drop in on company personnel offices. Do whatever is needed to meet face-to-face with someone in the company.

The more activity you generate, the more opportunities you will uncover.

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How companies extract ideas from users

■ We have a computer newsletter that is mailed to our users. It has a feedback section where they can give us feedback on products they like, tricks and shortcuts they've discovered in an application, applications they've found that help their productivity level or applications they've developed within their department that might be useful for other departments.

Dana Tate, management services analyst
City of Irving Finance Department, Irving, Texas

■ Our firm was very fast-growing until recently, and IS was generally reactive — we had no time to be proactive. So most ideas have been initiated informally by the users themselves. We also have a hot line they can call.

Sal Merchant, PC specialist
Conner Peripherals, Inc., San Jose, Calif.

■ We have a regular user group meeting. It's a vehicle intended to break down organizational barriers and promote free exchange of information. That has probably been the most fruitful thing we've done, and it was user-initiated. It's worked extremely well.

Don Babcock, manager of user services
Cajun Electric Power Cooperative,
Baton Rouge, La.

■ We've designated people in each of our departments to be on a committee. Their groups are supposed to feed them ideas. Then, they bring ideas to the meetings, where they must speak out to support them.

John Petersen,
Senior telecommunications specialist
Connectivity lab, Burroughs Wellcome Co.,
Research Triangle Park, N.C.

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Software Vendor	218,027
for large-scale systems	90,605
for medium-scale systems	68,763
for small-scale systems	58,422
for personal computers	97,695
for technical workstations	33,217
Non-CPU Computer Products Manufacturer	42,051
VAR/Dealer/Retailer	27,772
DP Service Bureau/ Contract DP Services	71,293
Consulting/Planning	76,848
Manufacturer (not computers)	202,131
Insurance	91,117
Healthcare	48,866
Banking/Financial Services	116,696
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Business Service (except DP)	63,793
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Public Utilities	24,931
Transportation	51,533
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SOURCE: Skill Survey of Computerworld's Audience, August 1992.

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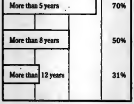

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HELP *for* HIRE

Time is money when you're looking for contract labor. The biggest expenditure is skills assessment, although it's worth the time it takes.

By Alice Bredin

Eight years ago, Larry Buran began hiring contract labor but didn't have a formal method for getting the right people. After years of hiring operations analysts who lacked the technical skills they boasted about, he changed his technique.

"I implemented a four-hour tryout period with anyone I hire," says Buran, an operations supervisor at Mervyn's Computer Center, a Plano, Texas, data center for Mervyn's Department Stores. If candidates are found unsuitable after the tryout, they go back to the agency, Buran says. "It's like Sears. If you buy something but don't like it, you take it back."

Hiring contract labor has become increasingly popular among information systems managers. It offers them the flexibility to adjust the work force as the demand for technical expertise changes, and it can help pick up the slack in short-handed departments.

But finding the right employee is not easy. Candidates who seem perfect in an interview can turn out to be dismal, and a recruiter's best candidate can become your worst nightmare. Add the fact that you're usually under time constraints when you have to hire contract labor, and you've got the ingredients for failure.

The biggest hassle is the time needed for skills assessment, which has led many IS managers to turn to recruiters who prescreen for technical proficiency. "I use a few agencies that I really trust," Buran says. It can take two weeks to three months to find the right person.

In the IS department at Edward D. Jones & Co., a financial services company in Maryland Heights, Mo., the average hiring time is two to three weeks. The company usually interviews three or four applicants when working with a familiar recruiter, seven or eight with a newer recruiter. Each applicant interviews with a minimum of three people in the department, a process as rigorous as the one used when hiring a full-time employee, says Chief Information Officer Rich Malone.

"It may be the team leader, a senior programmer analyst or a person doing the same job as the applicant. These people know the questions and can determine if the applicant fits," he says.

Trusting your instincts about a potential employee is still one of the best ways to make a hiring decision, IS managers say. But in some cases, hard proof such as vendor certification can eliminate uncertainty about technical know-how.

At Robert Half International, Inc., for instance, all recruits claiming proficiency with Lotus Development Corp. programs are tested through an alliance with Lotus. "They're tested on construction of Lotus applications and overall Lotus proficiency," says Richard Wooder, national director of the Robert Half IS division in New York. If successful, the applicants are certified by the vendor.

Ask the right question

Even the best agency cannot know exactly what your department needs, so it's important to ask the right questions. Once an applicant's skill level is determined, ask whether he has applied these tools and completed tasks similar to the ones involved in the job in question.

"If you were hiring someone to build a house, you wouldn't hire a person who can just pound a nail well. You would ask if they'd ever built a house," says Dick Camilleri, a regional manager at Command Systems, Inc., a Hartford, Conn.-based provider of IS professionals.

You should also know what to expect from the recruiter. Most offer employers a chance to get out of a contract, no questions asked, but the time frame varies. Others provide cash bonuses to contract employees for finishing a job early.

Alternative Resources Corp. (ARC) in Lincolnshire, Ill., a specialist in staffing technical IS operations, provides health benefits for employees hired for at least nine months. "The biggest problem for companies is attrition," ARC President Larry Kane explains. "Health benefits solve the problem of having to retrain every three months because the benefits keep employees working."

Bredin is a free-lance writer based in New York.

Contract issues

The following points should be clearly outlined in the recruitment agency's contract:

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Source: The Independent Computer Consultants Association, St. Louis

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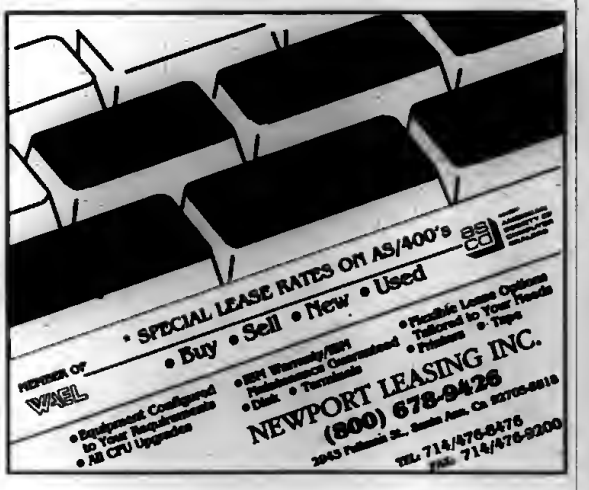

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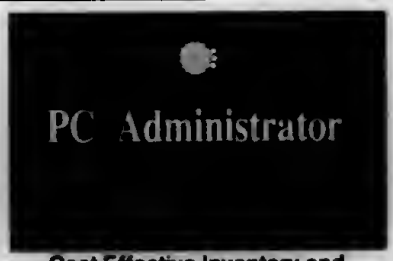

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Gainers / Losers

Percent

Gainers		Losers	
CE Software	32.0	Anacomp Inc.	-14.3
Storage Technology	31.1	Commodore Int'l (L)	-14.3
Compression Labs Inc.	29.4	Cambex Corp.	-13.3
Lotus Development	26.7	Group 1 Software	-12.5
Sequoia Systems Inc.	25.0	ChipSoft	-11.6
IPL Systems Inc.	24.1	McAfee Associates	-11.3
General Datacomm Inds.	22.6	Sapiens USA Inc.	-8.2
Network Equipment Tech.	19.6	Cirrus Logic	-7.6

Dollar

Gainers		Losers	
Cabletron Systems	11.13	BellSouth Corp	-2.13
Storage Technology	8.63	Xerox Corp	-2.13
Lotus Development	6.88	Southwestern Bell Corp.	-2.13
Progress Software Corp.	6.50	Sapiens USA Inc.	-2.00
SynOptics Communications (H)	6.00	PeopleSoft	-1.75
Sybase Inc. (H)	5.88	Group 1 Software	-1.50
Cisco Systems Inc.	5.13	Nynex Corp	-1.50
Intel Corp.	5.13	Matsushita Electronics (H)	-1.50

[redacted]

Parallel prospects

Investment analysts looking at massively parallel processing systems vendor Kendall Square Research Corp. (KSRC) said they like what they see.

Kendall Square Research's stock price closed Thursday at 16¾, up considerably from its 52-week low of less than 6. However, the issue is still off of its recent high of 22, and Salomon Brothers, Inc.'s Jeffry Canin said the current price weakness presents a buying opportunity.

Kendall Square Research also earned a Buy rating from Alex. Brown & Sons, Inc. analyst Christopher Mortenson in an April 21 report.

Part of the analysts' enthusiasm springs from the growth potential of the massively parallel processing marketplace. Framingham, Mass.-based research firm International Data Corp. (IDC) estimated 1992 market revenue rose to $380 million, up from $292 million in 1991. This year, the market could climb to $467 million, according to IDC.

Kendall Square Research's share of that pie is climbing as well. The company shipped its first four systems in 1991 and now boasts an installed base of 25, according to Salomon Brothers. And it recently reported record quarterly revenue.

Because the company's KSR-1 systems are highly scalable and field-upgradable, Kendall Square Research's potential for recurring revenue is great. A KSR-1 system can theoretically use as many as 1,088 processors. Nearly half the firm's users have already installed upgrades to their original systems, Salomon Brothers reported.

While the market may have potential, recent events have shown that technology's cutting edge is a slippery place to stand. Deskside parallel processor vendor **Wavetracer, Inc.** closed up shop, while supercomputer start-up **Cray Computer Corp.** (CRAY) has teetered on the precipice due to continual delays in shipping its first product.

Kendall Square Research intends to break new ground by selling to commercial business users as well as to the traditional scientific computing market. One of the key entry barriers for commercial parallel systems is the difficulty of programming for multiple processors. Kendall Square Research hopes to overcome this obstacle via its patented Allcache memory system, which assigns separate memory to each processor but appears to the programmer as a single, shared memory pool.

According to Mortenson, most of Kendall Square Research's revenue in 1993 will still come from scientific computing customers. However, success in the commercial market will be the company's key to long-term growth.

—Derek Slater

Exch	52-Week Range			May 7 3pm	Wk Net Change	Wk Pct Change
Communications and Network Services						
OTC	37.00	9.63	3COM Corp	37.00	4.25	13.0
NYS	80.25	61.50	American Info Techs Corp	74.63	-1.38	-1.8
NYS	60.50	40.63	AT&T	56.50	0.00	0.0
OTC	3.56	0.75	Artel Communication Corp	2.00	0.19	10.3
OTC	24.50	10.25	Banyan Systems Inc.	14.00	1.00	-6.7
NYS	56.75	42.50	Bell Atlantic Corp	52.25	0.50	1.0
NYS	57.50	46.75	BellSouth Corp	51.63	-2.13	-4.0
NYS	6.75	3.61	Bolt, Beranek & Newman	4.75	0.25	5.6
OTC	18.50	9.50	Brooktrout Technology	11.75	0.00	0.0
NYS	98.50	42.13	Cabletron Systems	98.50	11.13	12.7
OTC	36.50	17.75	Chipcom Corp	36.50	4.25	13.2
OTC	48.38	18.88	Cisco Systems Inc	48.38	5.13	11.8
OTC	19.00	5.50	Compression Labs Inc.	11.00	2.50	29.4
OTC	4.63	0.88	Data Switch Corp	3.50	-0.06	-1.8
NYS	22.13	12.50	Digital Comm. Assoc. (L)	13.00	0.25	2.0
OTC	12.75	4.88	Digital Systems Int'l Inc (L)	4.88	-0.38	-7.1
OTC	35.88	6.00	DSC Communications (H)	35.88	1.75	5.1
OTC	9.50	4.75	Fibronics Int'l Inc	6.50	0.00	0.0
OTC	27.00	8.75	FileNet Corp	10.50	0.00	0.0
OTC	4.38	1.50	Gandalf Technologies Inc.	3.50	-0.13	3.6
OTC	2.00	0.69	Gateway Communications	1.11	0.00	5.8
NYS	12.88	2.88	General Datacomm Inds.	12.88	2.38	22.6
ASE	4.00	2.00	Go Video	2.13	-0.08	2.9
NYS	37.75	30.63	GTE Corp	35.75	0.13	-0.3
NYS	84.25	62.50	ITT Corp	82.38	0.50	0.5
OTC	49.25	75.88	MCI Communications Corp	48.63	1.63	3.5
OTC	11.50	2.25	Microcom Inc.	3.63	0.13	3.6
OTC	24.25	4.75	Netrix Corp	5.88	-0.13	-2.1
OTC	19.00	8.75	Network Computing Devices	11.25	0.75	7.1
NYS	15.50	5.50	Network Equipment Tech.	7.63	1.25	19.6
OTC	23.75	8.00	Network General	8.83	-0.25	-2.8
OTC	15.75	8.63	Network Systems Corp.	8.75	-0.25	-2.8
OTC	65.25	13.63	Newbridge Networks Corp (H)	65.25	4.00	6.5
NYS	88.00	30.50	Northern Telecom Ltd.	36.11	-0.63	-1.7
OTC	35.25	22.38	Novell Inc.	31.75	0.75	2.5
NYS	92.38	75.00	Nynex Corp.	83.13	-1.50	-1.8
OTC	30.00	14.38	Octel Communications Corp.	23.00	2.38	12.2
OTC	6.50	3.38	Penril DataComm Networks	4.19	-0.31	6.9
OTC	39.00	10.25	PictureTel Corp	21.00	0.00	0.0
OTC	15.25	4.75	Proteon Inc. (L)	5.00	0.13	2.6
NYS	30.38	10.59	Scientific Atlanta Inc.	26.00	0.13	0.5
NYS	81.50	59.50	Southwestern Bell Corp	75.75	-2.13	2.7
NYS	33.25	21.00	Sprint Corp	31.00	-0.25	-0.8
OTC	27.00	10.50	Standard Microsystems Corp	15.63	0.63	4.2
OTC	16.50	6.88	StrataCom Inc.	12.88	0.50	3.0
OTC	117.50	25.50	SynOptics Communications (H)	117.50	6.00	5.4
OTC	7.13	4.13	Telebit Corp. (L)	4.63	0.00	0.0
OTC	9.50	2.13	Telematics Int'l Inc.	5.88	-0.13	-2.1
OTC	75.50	13.38	US Robotics	21.50	0.75	3.6
NYS	45.00	34.50	US West Inc.	41.50	-1.13	-2.6
OTC	48.00	12.00	Wellfleet Communications	48.00	4.75	11.0
OTC	16.25	7.00	Xircom	30.75	1.50	16.2
PCs and Workstations						
OTC	7.25	2.50	Advanced Logic Research	2.75	-0.13	4.3
OTC	65.25	61.50	Apple Computer Inc.	54.50	2.25	5.3
OTC	24.25	11.25	AST Research Inc.	15.75	1.25	8.9
NYS	32.50	3.75	Commodore Int'l (L)	3.75	-0.63	-14.3
NYS	58.50	23.13	Compaq Computer Corp	50.50	2.13	4.4
OTC	49.88	15.00	Dell Computer Corp.	32.13	2.88	9.8
NYS	80.63	50.25	Hewlett Packard Co.	78.50	4.25	5.7
NYS	35.38	16.13	Silicon Graphics (H)	33.75	0.25	0.7
OTC	41.00	22.50	Sun Microsystems Inc.	26.63	-0.63	-2.3
NYS	32.13	22.25	Tandy Corp	30.25	0.63	2.1
OTC	11.00	2.75	Zeos International Ltd.	4.06	-0.31	-7.1
Large Systems						
ASE	18.38	6.75	Amdahl Corp (L)	5.00	0.00	0.0
NYS	9.25	6.75	Convex Computer	4.75	-0.50	-7.3
OTC	6.13	1.88	Cray Computer	2.75	0.25	10.0
NYS	39.75	19.00	Cray Research Inc.	29.25	0.63	2.2
NYS	13.88	7.13	Data General Corp	9.50	0.00	0.0
NYS	49.25	30.50	Digital Equipment Corp	45.88	1.88	4.3
NYS	58.63	26.63	Harris Corp	37.75	1.13	3.1
NYS	100.50	45.88	IBM	48.00	-1.00	-2.0
OTC	22.00	5.50	Kendall Square Research	16.00	0.50	3.2
NYS	127.50	83.00	Matsushita Electronics (H)	124.00	1.50	-1.2
OTC	17.00	6.00	Pyramid Technology	15.13	0.38	3.4
OTC	24.00	11.13	Sequent Computer Sys.	21.75	2.50	13.0
OTC	16.50	1.50	Sequoia Systems Inc	2.50	0.50	25.0
NYS	48.50	29.50	Stratus Computer Inc	34.50	1.00	3.0
NYS	16.88	9.88	Tandem Computers Inc	10.88	0.00	0.0
NYS	13.88	7.75	Unisys Corp	11.88	0.13	1.1
Software						
OTC	63.50	26.25	Adobe Systems Inc. (H)	59.00	2.00	3.5
OTC	22.00	10.25	Aldus Corp	15.25	0.75	5.2
OTC	14.25	5.63	American Software Inc	5.88	0.13	2.1
OTC	28.13	9.75	Ask Computer Systems	12.63	1.63	14.8
OTC	54.50	29.75	Autodesk Inc.	45.25	5.00	32.4
OTC	14.75	2.50	Bachman Info. Systems	2.88	0.00	0.0
OTC	43.00	34.75	BGS Systems Inc.	38.00	1.50	4.1
OTC	84.13	37.75	BMC Software Inc.	51.50	1.50	2.7
OTC	28.25	17.00	Boole & Babbage	22.75	0.00	0.0
OTC	54.50	17.50	Borland Int'l Inc.	26.13	3.38	14.8
OTC	6.50	3.00	CE Software	4.13	1.00	32.0
ASE	22.50	6.25	Cheyenne Software Inc. (H)	27.25	0.75	2.8
OTC	19.50	8.75	ChipSoft	10.50	1.38	-11.6
OTC	9.75	5.63	Cognos Inc.	6.25	-0.25	-3.8
NYS	27.38	10.88	Computer Associates	26.00	2.88	12.4
NYS	12.50	2.75	Computervision Corp	3.13	0.00	0.0
OTC	34.25	19.25	Compuware Corp	26.75	2.00	8.1
OTC	14.25	5.75	Comshare Inc.	6.75	0.25	3.8
OTC	17.25	10.75	Corel Corp	14.25	0.00	0.0
OTC	29.25	6.00	Easel Corp.	7.00	0.00	0.0
OTC	25.25	12.00	8th Dimension	19.25	1.50	8.5
OTC	20.25	6.00	Frame Technology	2.13	0.38	5.6
OTC	20.75	10.50	Group 1 Software	10.50	-1.50	-12.5
OTC	35.25	18.75	Gupta (L)	20.25	-0.25	-1.2
OTC	8.75	3.50	Hogan Systems Inc	7.50	0.00	0.0
OTC	25.75	11.25	IMRS	14.50	0.00	0.0
OTC	34.75	18.50	Information Resources	12.50	1.25	4.0
OTC	42.00	12.13	Informix Corp	39.88	3.38	9.2
OTC	17.75	9.50	Intergraph Corp.	10.63	0.38	3.2
OTC	13.63	6.88	Interleaf Inc. (L)	8.75	0.50	6.1
OTC	18.00	6.75	Intersolv Inc.	8.25	0.75	10.0
OTC	16.00	8.25	KnowledgeWare Inc.	10.88	1.75	13.0
OTC	54.75	26.00	Legent Corp (L)	30.75	1.25	4.2
OTC	32.63	14.75	Lotus Development	32.63	6.88	26.7
OTC	23.00	7.75	MathSoft	11.75	1.50	14.6
OTC	23.25	5.25	McAfee Associates	6.88	-0.88	-11.3
OTC	31.63	1.88	Meca Software	12.25	0.13	1.1
OTC	15.00	5.25	Mentor Graphics	9.50	0.38	4.1
OTC	46.00	27.25	Micro Focus	35.38	3.38	10.5
OTC	19.00	4.38	Micrografx Inc.	5.25	0.63	13.5
OTC	95.00	65.50	Microsoft Corp.	86.63	0.50	0.4
OTC	39.38	14.00	Oracle Corp. (H)	39.50	3.88	10.9
OTC	31.88	15.38	Parametric Technology	30.25	2.75	10.0
OTC	40.38	22.50	PeopleSoft	29.00	-1.75	-5.7
OTC	9.50	3.50	Phoenix Technologies	5.75	0.00	0.0
OTC	40.00	25.38	Powersoft (L)	29.50	1.25	4.4
OTC	61.50	17.00	Platinum Software	23.75	0.75	3.3
OTC	25.00	11.25	Platinum Technology	14.50	0.75	5.5
OTC	61.50	29.00	Progress Software Corp.	44.00	6.50	17.3
OTC	18.50	2.94	Quarterdeck Office Sys.	3.19	-0.09	-2.8
OTC	24.38	11.75	Rainbow Technologies Inc.	20.00	0.00	0.0
OTC	15.75	4.00	RasterOps	7.38	0.88	13.5
OTC	15.25	3.63	Ross Systems	11.50	0.75	7.0
OTC	27.25	8.50	Sapiens USA Inc.	22.50	-2.00	-8.2
OTC	15.00	6.75	Software Publishing Corp.	7.88	0.38	5.0
OTC	9.13	2.00	Software Toolworks Inc.	8.50	1.00	13.3
OTC	4.50	0.75	Spinnaker Software	1.56	-0.08	-3.8
OTC	12.75	3.25	State of the Art	8.50	-0.63	6.8
NYS	24.63	13.75	Sterling Software Inc	20.00	0.25	1.3
OTC	18.75	8.00	Structural Dynamics Research	16.50	1.25	8.2
OTC	64.00	21.00	Sybase Inc. (H)	61.75	5.88	10.2
OTC	44.25	5.88	Symantec Corp.	15.50	2.50	19.4
NYS	12.50	5.25	Systems Center Inc.	10.50	0.25	2.4
OTC	25.50	10.00	System Software Assoc.	13.50	1.00	8.0
OTC	7.00	2.50	Tangic Corp	3.63	-0.75	6.5
OTC	22.75	9.13	Viewlogic Systems	16.38	1.63	10.9
OTC	23.38	6.75	Walker Interactive Systems	8.25	1.00	13.8
OTC	3.19	1.38	Wordstar	2.51	-0.06	2.6
Semiconductors						
NYS	12.88	7.38	Advanced Micro Devices	29.00	0.75	2.7
NYS	21.50	9.00	Analog Devices Inc.	19.38	0.25	1.3
OTC	22.63	7.63	Atmel Corp	22.63	3.38	17.5
OTC	9.38	2.75	Chips and Technologies	3.13	0.00	3.0
OTC	39.75	13.00	Cirrus Logic	16.63	-1.38	-7.6
NYS	12.50	7.38	Cypress Semiconductor Corp	10.25	-0.13	-1.2
NYS	16.13	7.75	Dallas Semiconductor	14.00	0.88	6.2
OTC	121.75	46.50	Intel Corp.	101.88	5.13	5.3
NYS	14.13	4.88	LSI Logic Corp	12.00	1.00	9.1
NYS	28.50	13.13	Micron Technology	24.50	1.38	5.9
NYS	74.50	37.13	Motorola Inc. (H)	76.50	3.13	4.3
NYS	14.50	8.50	National Semiconductor	14.50	1.50	11.5
OTC	18.75	6.50	Sierra Semiconductor (L)	7.50	0.00	0.0
OTC	38.50	22.25	SynOpsys	36.50	1.75	5.0
NYS	63.50	32.25	Texas Instruments	61.50	4.25	7.4
OTC	8.88	6.00	VLSI Technology	7.00	0.25	3.7
OTC	7.63	3.13	Weitek	6.75	0.50	8.0
ASE	9.63	4.13	Western Digital Corp	5.75	0.38	10.9
OTC	37.50	14.50	Xilinx	34.88	2.88	9.0
OTC	27.84	12.38	Zilog Inc.	27.00	1.75	6.9
Peripherals and Subsystems						
OTC	33.75	11.75	American Power Conversion	31.50	4.75	17.8
OTC	20.16	13.88	BancTec Inc.	19.00	-0.25	-1.3
OTC	18.00	6.25	Cambex Corp.	6.50	-1.00	-13.3
ASE	18.38	6.50	Cognitronics Corp.	2.50	-0.13	1.7
NYS	25.50	12.00	Conner Peripherals (L)	12.50	0.13	1.0
OTC	38.50	10.75	Creative Technologies Inc.	28.63	2.63	10.1
OTC	30.75	14.25	Data Race Inc.	22.00	2.00	10.0
ASE	17.00	4.75	Dataram Corp	9.50	0.25	2.7
NYS	33.50	9.50	EMC Corp (H)	33.50	2.00	6.3
OTC	10.50	5.38	Emulex Corp.	6.50	-0.13	-1.9
OTC	19.00	13.25	Evans & Sutherland	16.63	0.00	0.0
OTC	35.75	12.00	Exabyte	16.13	1.13	8.7
OTC	26.00	7.09	Intelligent Info. Systems	23.00	0.25	3.4
OTC	8.88	3.88	Iomega Corp	6.63	-0.50	7.5
OTC	22.75	5.75	IPL Systems Inc.	9.00	1.75	24.1
OTC	24.00	10.75	Komag Inc.	19.25	2.00	11.6
OTC	19.63	5.88	Maxtor Corp	6.63	0.38	6.0
OTC	11.75	3.75	Micropolis Corp	7.50	1.00	15.4
NYS	116.00	93.00	3M Corp	113.88	1.61	1.4
OTC	7.75	4.00	Printronix Inc.	6.88	0.50	-6.8
NYS	12.25	6.88	QMS Inc.	15.13	0.38	2.5
OTC	17.88	11.63	Quantum Corp	19.88	0.13	0.9
OTC	12.75	3.38	Radius Inc.	4.00	-0.11	-3.0
NYS	16.25	7.50	Recognition Equipment	14.00	0.50	3.7
OTC	13.88	4.50	Rexon Inc. (L)	5.75	-0.38	-6.1
OTC	22.38	12.00	Seagate Technology	15.50	0.50	3.3
NYS	40.88	18.00	Storage Technology	36.38	8.61	31.1
NYS	27.88	16.88	Tektronix Inc	26.50	1.13	4.4
NYS	88.88	66.25	Xerox Corp.	74.38	-2.13	-2.8
Services						
OTC	23.75	14.25	American Mgmt. Systems (H)	19.75	1.25	6.8
NYS	4.75	3.00	Anacomp Inc.	3.00	-0.50	-14.3
OTC	35.75	14.25	Analysts Int'l	26.75	-0.25	-0.9
NYS	56.13	38.75	Auto Data Processing	49.50	0.00	0.0
NYS	17.25	9.84	Ceridian Corp	14.50	-0.25	-1.7
NYS	17.38	13.13	Comdisco Inc.	15.13	-0.38	-2.4
OTC	8.00	4.50	Computer Horizons	7.75	0.25	3.3
NYS	80.50	57.00	Computer Sciences	72.50	-0.75	-1.0
NYS	9.63	6.75	Computer Task Group (L)	7.25	0.00	0.0
NYS	40.50	22.00	CompUSA Inc.	31.25	1.38	4.6
OTC	17.50	6.00	Corporate Software	12.00	1.00	9.1
OTC	24.75	7.50	Egghead Discount Software	9.25	0.88	10.4
NYS	35.88	25.25	General Motors E (EDS)	31.38	0.00	0.0
OTC	25.50	9.25	Inacom Corp	17.88	1.75	10.9
OTC	15.38	4.25	Intelligent Electronics	14.88	1.75	9.2
OTC	14.00	6.63	Marisel	11.00	0.50	4.8
OTC	14.75	5.75	Microage Inc.	13.38	0.13	0.9
OTC	43.00	21.75	Paychex	38.00	-0.75	1.9
NYS	87.25	37.00	Policy Management Sys.	45.00	6.88	12.1
NYS	37.88	16.81	Reynolds and Reynolds (H)	37.88	3.50	8.8
OTC	32.00	22.00	SEI Corp. (H)	32.00	3.50	32.3
OTC	24.50	16.88	Shared Medical Systems	20.13	0.25	1.2
OTC	13.88	5.75	SHL Systemhouse	11.75	0.75	6.8
OTC	20.25	18.25	Software Spectrum Inc.	26.50	3.13	13.4
OTC	33.75	22.25	SunGard Data Systems	29.00	0.15	0.4
NYS	4.00	1.13	Ultimate Corp.	3.25	0.00	0.0

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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In Brief

CSC profits up

Computer Sciences Corp. posted fourth-quarter net profits of $26.1 million, up 10% from the same period last year. Revenue was up marginally to $650 million. For the year, the El Segundo, Calif., systems integrator earned $78 million on revenue of $2.4 billion, increases of 15% and 17%, respectively, from a year earlier.

Informix acquisition

Informix Corp. last week agreed to acquire 15% of application tools vendor Intellicorp in Mountain View, Calif., for $200 million. The deal will give the San Jose, Calif., database vendor better access to Intellicorp's computer-aided software engineering and object-oriented tools. Intellicorp, a once high-flying expert systems company, will get needed cash and credibility. It has been looking for an investor since early last year, when a merger with KnowledgeWare, Inc. fizzled.

Symantec to buy firm

Symantec Corp. in Cupertino, Calif., has agreed to acquire **Contract Software International, Inc.**, a Carrollton, Texas, developer of contact management software, for $40 million in stock. The deal, which is expected to be consummated next month, would broaden Symantec's reach in the growing sales productivity and mobile professional market.

SHORT TAKES **IBM** tapped **Chrysler Corp.** Chief Financial Officer Jerome B. York to become its new CFO. . . . **Kalpana, Inc.** has received $9.1 million in mezzanine financing. . . . **Sapiens International Corp.** in Cary, N.C., has agreed to acquire **SmartStar Corp.**, a client/server tools developer in Goleta, Calif.

Bachman bets on full make-over

Mainframe CASE firm struggles to get a handle on client/server, PC worlds

By Kim S. Nash
BURLINGTON, MASS.

Bachman Information Systems, Inc. is twisting through some painful gyrations as user exasperation with CASE and tough competition from young development tool vendors force the company to remake itself.

The traditionally mainframe-reliant firm has lost money for the past three quarters (see chart) and cut 15% of its staff. It now hopes a recent reorganization and several downsizing products will lift the dark clouds.

Thus far, the results are so-so, according to both users and analysts.

Like other computer-aided software engineering (CASE) firms, such as KnowledgeWare, Inc., Bachman now has two mandates: break into the client/server circle with point-and-click, PC-based products, and support users' continuing mainframe development [CW, May 3]. But Bachman's financial troubles — combined with a tumultuous market full of eager development tool makers — have made users cautious.

Jim Knisley, database engineer at The Forethought Group, Inc., said he will delay making a decision about a client/server development platform until the market settles down.

Overall, Knisley said he is happy with the two Bachman tools he has used for more than two years, saying he will keep them for mainframe development.

Decisions, decisions

But 1993 will be a pivotal technology year for the Batesville, Ill., insurance firm, which plans to add Unix-based servers and databases but has yet to decide which ones.

That means development choices are up in the air, too.

"A shakeout is coming. We're in no rush," Knisley said. That attitude has eaten into Bachman's sales, acknowledged Alan Sarasohn, vice president of North American operations.

It is no comfort, either, that Chief Operating Officer Bob Hughes resigned in March after four months on the job, said Ed Acly, an analyst at International Data Corp. (IDC) in Framingham, Mass. Hughes, who left to "pursue other interests," according to a Bachman spokesman, will not be replaced; Chief Executive Officer Arnold Kraft has assumed Hughes' duties.

Alan Sarasohn, *Bachman VP of North American operations*

Bachman is not alone in its struggles or in its scramble to build and buy client/server development utilities. But Bachman's barrage of new products for non-IBM systems, such as Oracle Corp. and Sybase, Inc., confuses users, Acly said.

For example, Bachman is trying to address situations similar to Knisley's — which are growing in number — by teaming up with Powersoft Corp. to link Bachman's front-end tools to PowerBuilder, a Windows application generator. The link is due out next month, according to Sarasohn.

Bachman will not get into the generator business, he explained. Instead, it will build links to various code generators, such as "any that our customers desperately want to use," Sarasohn said.

Bold attempts

Other moves to break out of the IBM mainframe world include the following:

- Acquiring WindTunnel Software, Inc. puts Bachman closer to having a Windows tool. WindTunnel's product lets developers take unfinished applications on a dry run to test performance and find design errors. However, no time frame has been announced for releasing WindTunnel products.
- Releasing Database Design Kit. The $9,500 kit is aimed at helping users remodel DB2 applications for Oracle, The ASK Group, Inc.'s Ingres and DB2/2 databases, among others, and it requires IBM's OS/2 2.0 and OS/2 Database Manager. Current customers can get the kit for $3,500.
- Unveiling DBA/Converter for SQL Server. Priced like Database Design Kit, the product was designed to bring Bachman data structures into Sybase databases. Oracle, ASK and Informix Corp. converters are due this quarter.

Behind the pack

Bachman's new tools are playing catch-up with users who are shifting development priorities to client/server systems, observers said. If the first wave of client/server tools took Bachman by surprise, the company is now walking down the right path.

However, Bachman has to put forth a clearer message, according to Acly, who said Bachman's spray of links to other vendors' products seems haphazard. "That's not to say that they can't [be successful in client/server], but they have to find a niche," Acly said.

And while Bachman searches for that pocket, 1993 is make-or-break time, the IDC analyst predicted. The company has to continue to rein in operating costs, especially now that it is no longer buoyed by the IBM AD/Cycle partnership in the U.S., Acly said.

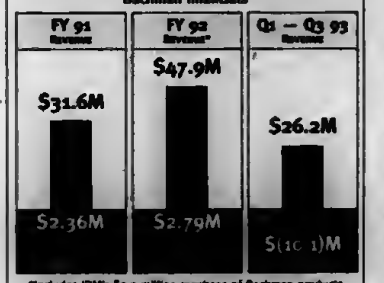
Strong support

Customer support generally was not hurt by Bachman's layoff of 50 of its 340 employees worldwide late last year, users said. Bachman recently won Sentry Market Research, Inc.'s user choice award for best support in the computer-aided software engineering business. Alan Sarasohn, vice president of North American operations, said he expects no further layoffs at the company.

Chips are down

BACHMAN IS HOPING ITS TOOLS STRATEGY WILL EVENTUALLY REINVIGORATE ITS BOTTOM LINE

Bachman financials



*Includes IBM's $2.3 million purchase of Bachman products
**Includes a $1.8 million restructuring charge

Source: Bachman Information Systems, Inc.

On track

In late 1992, Bachman's board enlisted investment banking firm Morgan Stanley Group, Inc., which backed Bachman's 1991 initial public offering "to look at [financial] alternatives to get us back on track," said Alan Sarasohn, vice president of North American operations. The company rejected a takeover bid by another firm; Sarasohn denied KnowledgeWare was the secret bidder, as has been rumored.

Bad blood?

IBM invested $25 million in KnowledgeWare products in mid-1992, about the same time it agreed to buy just $2.3 million worth of products from Bachman. Some observers said Bachman had fallen out of favor with IBM. KnowledgeWare's "$25 million deal means something," said IDC analyst Ed Acly. Bachman, which left IBM's AD/Cycle inner circle in the U.S. in January, denied there was bad blood. Bachman exited AD/Cycle because IBM's client/server direction was too blue, officials said.

Wysiwyg

IF you were not in computers, what would YOU have done FOR A LIVING?

Dick Pick, president of Pick Systems, bred horses and worked on a dairy farm while growing up, so he says he could have seen himself taking that experience and becoming a farmer on a large produce farm. But computers entered his life, and he's been happy tending to technology for the past 30 years.

Harry Saal, CEO and president of Network General, could have been the next Al Unser, had he been introduced to race car driving earlier in life. Saal began race car driving two years ago. He took lessons and bought himself an NSX race car. He claims he hasn't won a race yet because he is still mastering his skills. Saal can be found racing at the Sears Point Race Track and the Laguna Seca Race Track in California.

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The Fifth Wave *by* Rich Tennant

"YOU IDIOT! YOU DRAG A MAINFRAME COMPUTER ONTO A LIFE RAFT AND YOU FORGET TO BRING A SURGE PROTECTOR?!"

Inside Lines

Remotely annoying

Early users of the recently released remote version of Lotus' CC:Mail who take their notebooks on the road and dip them into docking stations at the office are finding that they have to keep two copies of the mail package on their hard drives — one for the road and one for the office. The problem, according to one user, is that the remote version was designed to be used over a modem and doesn't retain a network connection. To send and receive messages conveniently from the desktop, users need the traditional CC:Mail. Additionally, messages read and disposed of on the road show up as unread when the user returns to the office. A CC:Mail official said Lotus is working on a fix for next year.

Work flow gone awry

Action Technologies — the company that sold Message Handling Service to Novell and received a lot of ink in the past year for its work-flow addition to Lotus' Notes (expected this summer) — recently laid off about 25% of its 100-plus staff, including Fritz Dressler, director of marketing. Troubles include heavy work-flow research and development costs and an embryonic market. Additionally, Action Technologies' relationship with Lotus is cooling: Lotus backed away from plans to resell Action Technologies' work-flow engine. Also, Action Vice President Brownell Chalstrom recently left the company only several months after he had transferred there from the Notes division of Lotus. Reportedly, Chalstrom's opinion on Action's direction differed from that of management.

A GUI mess

It looks like the copyright infringement suit Apple slapped on Microsoft and Hewlett-Packard five years ago may finally be coming to a head. Last week, a federal judge said the case will go to trial on June 28 in San Francisco. Apple attorneys even hinted that they may call Microsoft CEO Bill Gates to the stand.

Staying put

DEC users of Computer Associates' DISSPLA graphics software, disgruntled by encrypted code that shuts off software if licensing terms are abrogated, are not in for the relief recently given to mainframe users [CW, March 15]. CA officials said they have "no plans" to change the encryptions in the applications, which they said were present in the software before it was acquired.

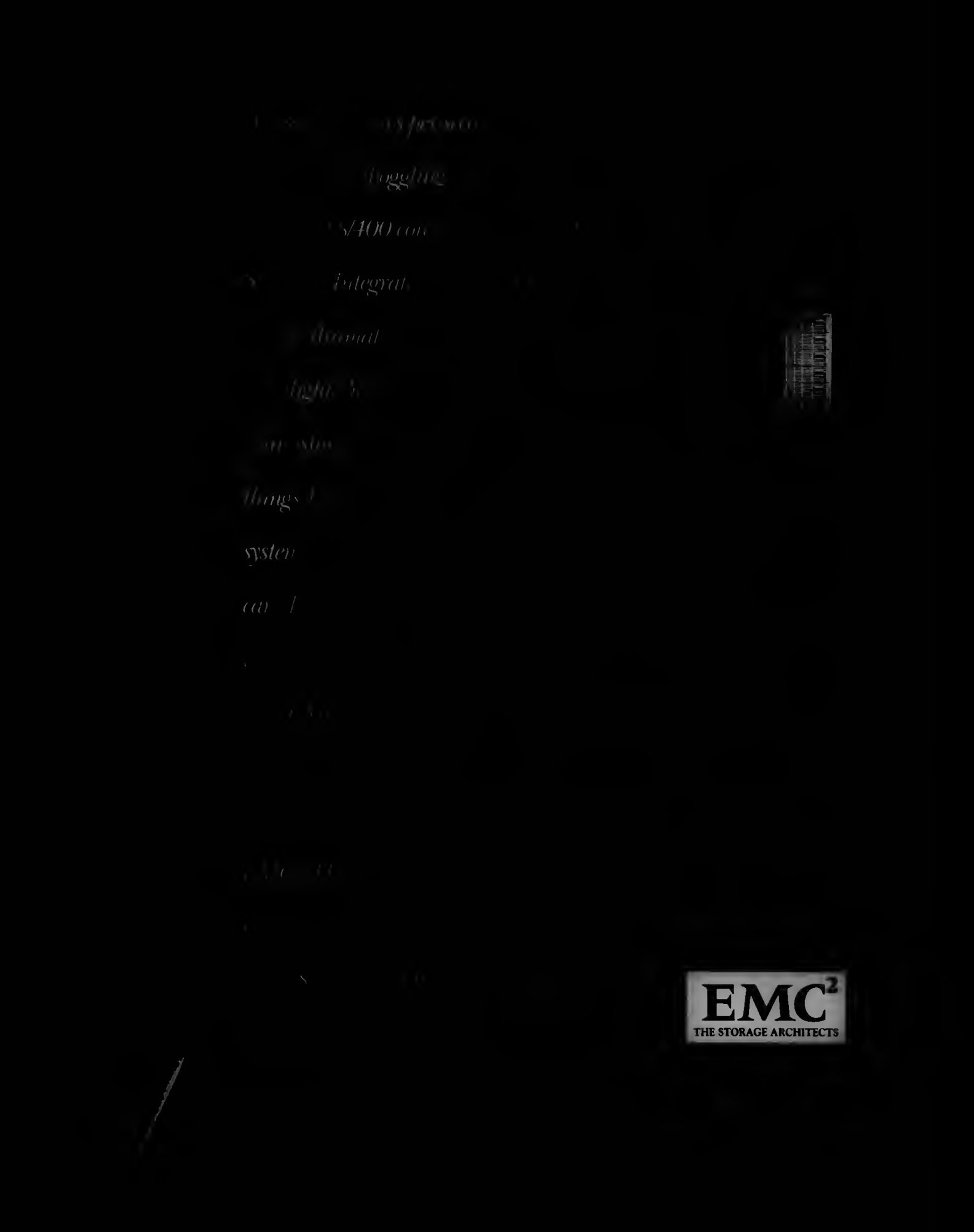
Docked out

DEC plans to ship the company's EISA-based PC platforms with PCMCIA slots later this month. These EISA-based platforms are an addition to the company's MTE family of PC servers, sources said. They are expected to be bundled with 120M- or 240M-byte hard drives, S3 local bus video and SCSI support.

Stand clear

Personal digital assistants will provide a breeding ground for infrared data transfer, sources say. The Zoomer, from Tandy and Casio, will have built-in infrared to do point-and-click data transfer, as will Apple's Newton, sources close to the projects said.

There hasn't been a whole lot to cheer about over at Data General lately, but a battle of the bands contest at LotusWorld brought out the DG faithful. Cheering DG supporters, led by DG founder Ed deCastro, helped the members of the Talking Propellerheads win top honors at a charity benefit for Common Ground, which raises money for disadvantaged children. Losing bands included Citadel, made up of DEC employees, Outta Bounds, consisting of Computervision employees, and Look and Feel, which drew members from Lotus, Mathsoft, Tom Synder Productions and Homans Research. Although Look and Feel didn't win, its members consoled themselves by reminding the crowd that they were the only band drawn from profitable companies. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-5001 or 70537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.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